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The primary purpose of the Model Permit is to assist permit writers in drafting or reviewing hazardous waste facility permits. The guidance document covers process-specific conditions for container storage areas, tanks, incinerators, waste piles, surface impoundments, land tratment areas, and landfills, etc. The introduction to the Model Permit discusses an approach with examples to developing permits.

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REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
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PB90 210998 /AS

MODEL RCRA PERMIT
FOR HAZARDOUS WASTE
MANAGEMENT FACILITIES

[DRAFT]

U.S. ENVIRONMENTAL PROTECTION AGENCY
SEPTEMBER 1988

FOREWORD

This "Model Permit" is a guide to help Permit Writers draft and review RCRA permit conditions. By using language that has, in most cases, already been well thought out and refined, this model will help: shorten the time needed to draft and review permits; promote national consistency; and result in clearer and more readily implementable and enforceable permit conditions.

This guidance is considered to be a dynamic working document. It has been said that the last permit in each Region (or State) typically serves as the latest "Model Permit" for the next permit, since it has the latest cogitated and refined language. This "Model Permit" guidance contains conditions from recent permits from various Regions. It is anticipated that this model will be updated periodically, as needed, in order to incorporate: (1) new rules, policies, and guidances; (2) results of judicial decisions; and (3) Regional Permit Writer and other comments, and otherwise improved permit condition language.

Any comments or questions on this version should be addressed to: Kenneth Shuster, Permits and State Programs Division (OS-340); Office of Solid Waste, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460 (FTS: 382-2214)

Diskettes of the Model Permit are available to Permit Writers only by directly contacting Ms. DeDe Rhodes, A.T. Kearney, Inc., at (703) 683-7932.

ACKNOWLEDGEMENTS

This Model Permit was compiled by A.T. Kearney, Inc. under contract to EPA. The EPA Project Officer was Kenneth Shuster.

RCRA MODEL PERMIT

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I. INTRODUCTION

PURPOSE OF GUIDANCE. The purpose of this guidance is to help Permit Writers in drafting or reviewing hazardous waste management facility permits under Subtitle C of the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The guidance provides an updated model of recommended language and format for permit conditions.

SCOPE OF GUIDANCE. The Model Permit consists of a permit cover sheet and 16 modules. The first two modules are applicable to all permits and cover: general permit conditions (e.g., duration of permit) and general facility conditions (e.g., waste analysis plan, site security, and personnel training plan). The next nine modules contain conditions for each type of unit (e.g., tanks, incinerators, landfills) for which there are unit-specific standards in 40 CFR Part 264. The next four modules address ground-water monitoring and corrective action conditions. The last module addresses post-closure care. The Permit Writer needs to select which of the last 14 modules are pertinent to the particular facility under review, and then within all pertinent modules, which conditions are pertinent.

This version of the Model Permit is based on the EPA regulations in 40 CFR Parts 264, 268, and 270, as of July 1, 1987, and related policies and guidances. It supersedes all earlier versions. In addition, included in this guidance are permit conditions contemplated for corrective actions for solid waste managements units (SWMUs) under HSWA[1] [presented in Module XII(B)]. The guidance does not include a model permit for mobile treatment units (MTUs), which will appear in a separate guidance document, nor does it include a model permit for Research, Development, and Demonstration (RD&D) permits nor for miscellaneous units (Subpart X). (The "Model RCRA Research, Development and Demonstration, Fact Sheet and Public Notice," (EPA/530-SW-87-003), dated January 1987 does provide a model for RD&D permits.)

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[1] The Hazardous and Solid Waste Amendments of 1984 (HSWA) amended RCRA to include Section 3004(u) to require corrective action for all releases of hazardous waste or constituents from any SWMU at a facility seeking a RCRA permit. These permits may include schedules of compliance for such corrective action where the corrective action cannot be completed prior to permitting. A new Subpart S to 40 CFR 264, with associated amendments to 40 CFR 270, is being developed to implement this provision. Nevertheless, all permits issued before these rules are finalized must include permit conditions to address corrective action for SWMUs. Because of this statutory requirement, the Model Permit includes Module XII(B), addressing corrective action for SWMUs, even though the detailed rules have not yet been issued.

The Model Permit identifies: (1) conditions that are exclusive to existing facilities and conditions that are exclusive to new facilities, as well as conditions that apply to both existing and new facilities; (2) optional methods of meeting the regulatory requirements, where allowed; and (3) conditions which may be waived or varied under the regulations.

The Model Permit may be used for drafting or reviewing post-closure permits, as well as for operating permits, by eliminating the conditions for operating requirements that no longer apply.

RELATIONSHIP OF MODEL PERMIT TO PERMIT QUALITY PROTOCOL. The Model Permit guidance is meant to be used in conjunction with the RCRA Permit Quality Protocol[2]. The Protocol provides: (1) a checklist of permit conditions, which mirrors the Model Permit conditions, to be used to review the completeness of the permit, (2) a "Permit Condition Evaluation Guidance," (3) a discussion of the purpose and content of the Administrative Record to support the permit and a checklist for procedural requirements, and (4) a checklist for RCRA RD&D permit conditions. The "Permit Condition Evaluation Guidance" gives information on how to evaluate a select number of permit conditions in terms of: a) thoroughness and technical soundness, by providing a description of the scope and content of the condition and pertinent information that should be in Part B of the permit application to support the condition, and by listing references to help with technical evaluations and b) enforceability of permit conditions.

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[2] The RCRA Permit Quality Protocol, EPA, September 1988, is an updated version of the RCRA Permit Quality Protocol, EPA, August 1986.

II. APPROACH TO WRITING PERMITS

Permits establish the requirements that facilities must comply with (since, in general, compliance with a RCRA permit constitutes compliance, for enforcement purposes, with Subtitle C of RCRA). Therefore, it is necessary for the permit to be:

(1) Protective of human health and the environment,
(2) Comprehensive (i.e., reflect all the pertinent requirements in the regulations, 40 CFR Parts 264, 268, and 270, and HSWA--requirements not in the regulations that are implemented via statute,
(3) Technically sound, and
(4) Enforceable (i.e., clear, unambiguous, and specific).

Clearly, these are inter-related. For example, if a permit condition is not technically sound, it may not be protective, meet the regulations, or be enforceable. The Permit Writer is responsible for making sure the permit meets these criteria. Tools available to the Permit Writer include: (1) the regulations (and related Federal Register preambles), primarily 40 CFR Parts 264, 268, and 270, (2) RCRA, as amended by HSWA, (3) the permit (Part B) application, (4) enforcement inspection and other site-specific reports, (5) Agency guidances and regulatory interpretations, as contained in the OSWER directives system and "Permit Policy Compendium" (including this Model Permit and the Permit Quality Protocol), and (6) technical documents/texts. The Model Permit and Protocol give references to (1), (2), (3), (5), and some (6).

Permit development begins with submission of the permit (Part B) application. Permit applications are required to address all the hazardous waste facility requirements, contained primarily in 40 CFR Parts 264, 268, and 270, and HSWA. These applications include location, design, construction, operation, monitoring, closure, and post-closure information, which require various technical expertise to review (e.g., hydrogeology, chemistry, civil engineering, and statistics). During the permit application review process, technical soundness, comprehensiveness, and protectiveness aspects listed above are thoroughly evaluated. Once the permit application is determined to be complete, technically sound, and protective, permit conditions incorporating this Part B information will likewise tend to be complete, technically sound and protective and easier to review for these attributes.

To determine what conditions to include in the permit, the Permit Writer needs to: (1) address all pertinent requirements in the regulations (Parts 264, 268, and 270) and HSWA and (2) include items proposed by the Permittee in Part B of the permit application to meet the regulations or to protect human health and the environment.

Since both the permit application and the permit must address all applicable requirements in the regulations and HSWA, the completeness checks are similar and mirror the regulations and HSWA, but the permit application checklist needs to be more detailed and technically oriented, since it also includes the requisite analyses to determine whether the design, etc. meets the performance standards.

DEVELOPING PERMIT CONDITIONS. At the end of this chapter are two examples that illustrate how to develop permit conditions from regulatory requirements and the Part B, including the necessary technical reviews and supporting information needed in the Administrative Record.

ENFORCEABILITY. In general, to enhance clarity and enforceability, it helps to ask and answer, for each permit condition, the following questions: WHAT?, WHERE?, HOW?, WHEN?, BY WHOM?, and TO WHOM? If a permit condition does not clearly answer these questions, then the permit condition may need to be modified to do so. These questions should be asked of all permit attachments (Part B items incorporated by reference), as well as the permit conditions. [See also the discussion on specificity versus flexibility in the next section on INCORPORATION OF PART B ITEMS INTO PERMIT.]

INCORPORATION OF PART B ITEMS INTO PERMIT. As discussed above, the Model Permit incorporates, by reference, a number of items that should be in Part B of the permit applications. Some of these items are specifically required by the 40 CFR Part 264 rules, as well as the Part 270 rules (e.g., Facility Inspection Schedule; Contingency Plan; Closure Plan; Post-Closure Plan). It is entirely appropriate (if well written, comprehensive, technically sound, and enforceable) to incorporate these items by specific reference.

In some cases, the Permit Writer may want to incorporate other items that are in the Part B, such as run-on/run-off control system designs and liner and leachate collection and removal system designs, that are required by 40 CFR Part 270 to demonstrate compliance with Part 264 performance standards. These items can be incorporated by either placing the specific information in the permit (as permit conditions) or by referencing these items, and either attaching them to the permit, or in some cases, including a specific reference to the item, in the Part B or Administrative Record (e.g., for engineering drawings).

Three cautions are warranted here: (1) the Permit Writer must be very careful to make sure that only what is desired as a permit condition is incorporated by reference, (2) that the incorporated material says what the Permit Writer wants it to say (e.g., it is enforceable as discussed above), and (3) that the permit provide flexibility for modifications. These are discussed below.

When incorporating, by reference, items that are in Part B of the permit application, the Permit Writer needs to make sure that the reference includes a concise description of each item, including, as appropriate, the document title, number, and date, and any updates or amendments to the item. This is particularly true of Part B items that have undergone substantial revisions, including replacements, addenda, and errata. In general, it is best to have a consolidated, updated document to reference, rather than an original document that has a number of replacements, addenda, or errata. Where practical, it is also best to attach to the permit all items incorporated by reference.

If the Part B material the Permit Writer wants to incorporate does not contain the information the Permit Writer wants it to, then, as discussed above, the Permit Writer needs to get the owner/operator to revise it. Otherwise, the Permit Writer will have to draft the appropriate permit condition to overcome the deficiency.

It is desirable, for enforcement purposes, for a permit to be very detailed (e.g., to include design specifications from the Part B). However, the more detailed a permit is, the more restrictive it becomes. In some cases, such restrictiveness can be counterproductive. For example, it could unnecessarily delay implementation of environmentally desirable changes, such as installation of monitoring wells, level controls, or leachate sump pumps. Such actions may be technically necessary or desirable but for procedural and legal reasons must be foregone or postponed since, in order to stay in compliance with the permit, the Permittee must seek and get approval of a permit modification before making any desirable or necessary changes.

Such changes may be precipitated by: (1) obsolescence (e.g., the manufacturer goes out of business or discontinues the specified model), (2) a desire to upgrade (e.g., a thicker liner, a greater capacity pump), (3) cost (e.g., the availability of a comparable or better model that is cheaper), (4) new performance information (e.g., that shows another model to be superior), (5) a new technically improved model (e.g., a new material), or (6) a change in personnel or procedure (e.g., a change in person identified in the contingency plan as responsible for responding to emergencies). For example, it may be desirable or necessary to replace the "XYZ Company Model 15" 50 gpm cast iron, manually activated leachate sump pump with an activated leachate sump pump (an available pump that the manufacturer still services, of greater capacity, of better material, with better controls, and more reliable). A good solution to this dilemma is to include the detailed specifications in the permit conditions, but also to provide flexibility by permit language that allows changes. Such language could state that for changes to items in the permit, the owner/operator must notify EPA (usually in advance) and follow the permit modification rules, which are currently being revised (i.e., some changes can be made by notice without EPA approval, or proposed changes can be made upon notification and approval, or after no word from EPA by a certain date, and some changes can only be made by notice to EPA and formal permit modification, including public notice and comment, at the other extreme).

The substitution of an equivalent or better device or of a different contact person for emergencies could be examples of the first extreme. Model Permit conditions I.E.10. and I.E.11. address Permittee reporting requirements for facility changes and condition I.B.1. addresses causes for permit modifications.

At the back of each module is a list of the Part B items referenced in that module. In general, these items should be attached to the permit.

USE OF COMPLIANCE SCHEDULES IN THE PERMIT. Under Section 270.33, the permit may specify a schedule of compliance leading to compliance with the Act and regulations. Any schedule of compliance must require the facility to come into compliance as soon as possible, and specify the compliance date. If the compliance schedule is for more that one year, it must include interim requirements and dates. The time between interim dates shall not exceed one year, except if a task is not readily divisible into stages of less than one year to complete, then submission of progress reports by interim dates shall be required.

Compliance schedules are appropriate to allow facilities to come into compliance with HSWA requirements and Part 264 standards, if they are not already required under Parts 265 or 270 (e.g., for installation of liners and LCRSs). In general, compliance schedules should not be used in permits to secure compliance with Parts 265 or 270, to the extent such requirements are relevant to the permit issuance. This is especially true of requirements upon which other conditions are based, such as a lack of adequate hydrogeologic assessment to determine ground-water monitoring system design. NODs, compliance orders, and permit denials are generally more appropriate for these deficiencies.

USE OF "OMNIBUS" PROVISION. The conditions listed within each module of this Model Permit should cover most situations. However, under authority of Section 3005(c)(3) of RCRA [which was added by Section 212 of HSWA and codified as 40 CFR 270.32(b)(2)], Permit Writers can add terms and conditions that are not final regulations in Part 264 or Part 270, if they determine that such conditions are necessary to protect human health and the environment for that facility. This is referred to as the "omnibus" provision. For example, Permit Writers might want to add provisions in the ground-water monitoring modules for: (1) unsaturated zone monitoring (where depth or flow time to the water table is relatively great and the hydrogeologic setting is quite complex); (2) saturated zone monitoring in a low permeability (confining) zone above an aquifer; (3) air monitoring for certain volatile organics; or (4) well abandonment. The statement of basis or Fact Sheet accompanying the permit must explain the basis or rationale for these conditions, and the Administrative Record must document the basis.

The legislative history pertaining to the "omnibus" provision suggests that an appropriate use of this provision is to add conditions to a permit that reflect proposed or pending rules. That way, the permit will not have to be modified when the rule is finalized. Again, the omnibus provision should be used only where it is deemed necessary to protect human health and the environment. In deciding on whether to include such a provision and in crafting the language for the provision, the Permit Writer should assess the probability that the rule will be finalized as written and that the condition is needed, in the short term, in the permit to protect human health and the environment.

AUTOMATIC INCORPORATION OF HSWA ITEMS INTO PERMIT. In several instances, HSWA imposes self-implementing requirements that apply to certain facilities, regardless of what their current permit conditions say. 40 CFR 270.4 has been amended (52 FR 45788, December 1, 1987) to clarify that compliance with a RCRA permit constitutes compliance with Subtitle C of RCRA, except for HSWA self-implementing requirements. That is, the permit does not shield the facility from these requirements. There is no need to reopen or modify the existing permits to incorporate these provisions, unless a variance is sought (where the statute provides for a variance). The reason is that these requirements go into effect by statute (e.g., the ban on bulk liquids in landfills and regulations promulgated under 40 CFR Part 268 restricting the placement of hazardous wastes in or on the land). Thus, the land disposal restrictions are fully enforceable, notwithstanding contrary or absent permit provisions concerning land disposal.

For land disposal permits that are now being drafted, it is not necessary (but is recommended) to provide permit conditions regarding the applicability of the land disposal restrictions, since they apply automatically. For the land disposal restriction rules already issued and permits issued after additional rules are finalized, it is recommended that the applicable conditions be incorporated into the permit. However, whether or not such conditions are included, the Fact Sheet should briefly describe the effect of new land disposal restriction requirements for the benefit of the public and the facility owner/operator.

ADMINISTRATIVE RECORD. Because the Administrative Record is the official documentation explaining the basis of permit conditions and the only supporting evidence that EPA can use during appeals of permit decisions, the RCRA Permit Quality Protocol includes a chapter on Administrative Records. The chapter includes a checklist for Administrative Record content.

Example #1: Regarding run-on and run-off, the regulations require:

> " (f) The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 25-year storm.
> (g) The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.
> (h) Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system." [40 CFR 264.301]

This is a design and operation performance standard, as are many of the Part 264 requirements, which provides flexibility to the permit applicant but also requires a substantial amount of information to be supplied and evaluated. For this run-on/run-off example, the applicant must provide: design specifications (e.g., dimensions and locations of dikes, berms, culverts, basins, and tanks, etc., for both the run-on and run-off systems); operating plans (e.g., how run-off will be treated and discharged; how tank or basin levels will be controlled); and any test and analysis information to support the design or operating procedures and to show they meet the performance standards (e.g., peak flow/discharge and maximum volume calculations, based on watershed size, shape, slope, and surface, etc., to show that the size of the culverts, tanks, pumps, etc. are large enough to handle the 25-year storm). During the permit application review process, the Permit Writer makes sure the application is complete, and that the design and operating plans are technically sound and meet the performance standards. This evaluation may include independent analyses and/or a check on the calculations presented by the applicant. The "Permit Condition Evaluation Guidance" in the Protocol includes a discussion of evaluation criteria for the design, construction, and operating plans for run-off controls, including supporting calculations and references for further information on how to evaluate these. Three EPA-developed references are given: the "Permit Applicants' Guidance Manual" (1984), the "Permit Writers' Guidance Manual" (1983), and the "Construction Quality Assurance Manual" (1985), each of which has detailed technical discussions and provides further references. The Permittee and Permit Writer analyses to support the determination of regulatory compliance need to be placed in the Administrative Record [see discussion of Administrative Record in the Protocol].

Once the permit application is complete, is judged technically sound and protective, and meets the performance standards, the task of writing the permit is greatly simplified. Continuing with the run-on/run-off example, the respective Model Permit conditions specify:

" The permittee shall design, construct, operate, and maintain a run-on control system...[and] run-off management system... in accordance with the design plans, specifications, and operating practices contained in Permit Attachment[s]...[from Part B of the permit application]."

" The Permittee shall empty or otherwise manage run-on and run-off collection and holding facilities to maintain the design capacity of the systems(s), in accordance with the design plans and operating practices specified in Permit Attachment[s]...[from Part B of the permit application]."

Clearly, if this approach is used (i.e., including, by reference, portions of the permit (Part B) application), it simplifies the permit and writing the permit, but requires that the Part B be complete, clear, unambiguous, and correct. It also helps if the Part B doesn't contain superfluous information. Since the Part B is written by the Permittee, and often by a consultant or number of specialized consultants hired by the Permittee, the Part B may not meet these criteria. One way to correct this is to have the Permittee revise the Part B, which typically means a detailed review and perhaps even a rewrite of portions by the Permit Writer. (Generally, the Permit Writer should not write portions of the permit application, but on occasion some drafted or suggested language in review comments by the Permit Writer is more expeditious and helpful than a critical statement.) Or the Permit Writer may need to incorporate only relevant portions of the Part B, and/or provide the needed language directly in the permit.

Example #2: Regarding leachate collection and removal systems (LCRSs), the regulations require:

> " A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the landfill. The Regional Administrator will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must be:
> - (i) Constructed of materials that are:
>   - (A) Chemically resistant to the waste managed in the landfill and the leachate expected to be generated; and
>   - (B) Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill; and
> - (ii) Designed and operated to function without clogging through the scheduled closure of the landfill." [40 CFR 264.301(a)(2)]

Regarding the LCRS, the codified HSWA rules state:

> " (c) The owner or operator...must install...a leachate collection system above and between the liners...[that] protects[s] human health and the environment." [40 CFR 264.301(c)]

As in the run-on/run-off example, both of these are design and operation performance standards, which provide flexibility to the permit applicant but also require a substantial amount of information to be supplied and evaluated. Although the above HSWA language essentially replaced 264.301(a)(2), and the HSWA language is more vague, in practice, the 264.301(a)(2) language is being applied to meet the HSWA performance standard, except that the one-foot head requirement is viewed as a longer-duration maximum that may be exceeded temporarily upon major storm events. At any rate, the information and evaluation needs are the same. That is, the applicant must provide: design specifications (e.g., to determine the head or to show compliance with the one-foot head requirement, the design must specify: thickness of drainage layer, permeability of drainage layer, slope of drainage layer bottom, length of run or distance between drainage sumps, permeability of bottom layer, and sump removal rate); operating plans (e.g., will the sumps be automatically activated and how, or will they be manually inspected and activated and at what frequency, etc.); and any test and analysis information (e.g., leachate/drainage layer compatibility test results; weight/compressibility analyses; leachate generation and impingement rate analyses, in conjunction with the design, to show compliance with the one-foot head). As in the previous example, during the permit application review process, the Permit Writer makes sure the application is complete, and that the design and operating plans are technically sound and meet the performance standards. This evaluation may include independent analyses and/or a check on the calculations presented by the applicant. Again, these supporting calculations need to be placed in the Administrative Record.

Once the permit application is complete and is judged technically sound and protective, the task of writing the permit is greatly simplified. Continuing with the LCRS example, the Model Permit condition simply states:

> " The Permittee shall install...two leachate collection and removal systems... in accordance with the design plans and reports contained in Permit Attachment VIII-1."

The Model Permit then contains the following two notes to the Permit Writer:

- "Detailed design drawings of...the leachate collection and removal system and engineering reports contained in Permit Attachment VIII-1, must demonstrate how the Permittee will meet all of the requirements of 40 CFR 264.301(c)."
- "The Permit Writer should provide a brief description of the...leachate collection and removal system (e.g., construction materials, thickness and permeability of drainage layer). Example language is as follows: ...The leachate collection and removal system shall consist of a drainage tile system, embedded in a course sand media of 1x10^{-1} cm/sec or greater permeability, discharging to a sump with a level-controlled positive displacement pump, discharging to Tank 002 for subsequent testing and discharge to NPDES-regulated Outfall 002 or to the leachate treatment system."

Clearly, it is very important that the referenced LCRS design and operating plans be complete, clear, and technically sound.

III. INSTRUCTIONS FOR USE OF GUIDANCE

In developing a permit for a specific facility, Permit Writers should include the permit cover or authorization sheet and Modules I (General Permit Conditions) and II (General Facility Conditions). In addition, any other modules (e.g., tank systems, landfills) that pertain to the facility should be included. Omit the others and renumber the remaining modules accordingly.

The modules contain bracketed items. These are either: (1) citations from the Act (RCRA/HSWA) or RCRA regulations (i.e., from 40 CFR Parts 260-264, 266, 268, 270, and 124) and should be included in the permit (States should substitute or add their own citations); (2) optional language or alternatives that require the Permit Writer to select the appropriate words; or (3) explanatory notes (in bold type) that give guidance but should not be included as part of the actual permit.

The major HSWA provisions are also identified in each module to help Permit Writers decide which provision should be addressed by EPA or State Permit Writers where a State is only partially authorized.

APPLICABILITY TO STATE PERMITS. The Model Permit can be used by State Permit Writers as well as EPA Permit Writers. It will be particularly useful in those States whose regulations closely mirror EPA's. Appropriate State-specific terms will need to be substituted for EPA-specific terms such as "Regional Administrator." State Permit Writers will also need to add or revise permit conditions for any State regulatory requirements that are broader in scope, more stringent, or otherwise different than the Federal requirements.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
PERMIT
FOR A HAZARDOUS WASTE MANAGEMENT FACILITY

Permittee_________________________
____
____

Facility Identification
Number______________________________
Permit Number__________________________

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 USC 6901 et seq., commonly known as RCRA) and regulations promulgated thereunder by the U.S. Environmental Protection Agency (EPA) (codified and to be codified in Title 40 of the Code of Federal Regulations), a Permit is issued to **[insert name of the Permittee]** ____________________ (hereafter called the Permittee), to operate a hazardous waste **[choose applicable management method: treatment, storage, and/or disposal]** facility located in **[insert name of city and state]** _________________, on **[insert street address]** ____________________, at latitude ______ and longitude ______, summarily described as follows:

[Note: The Permit Writer should insert a brief description of the facility here. This description should contain the following information: a summary of the types of waste management units (e.g., tanks, landfills) permitted; whether or not the facility is required to conduct ground-water monitoring; how closure will be accomplished (e.g., clean closure or closure in place); the types of waste management units (tanks, waste pile, surface impoundment, landfill, or land treatment units) that may require post-closure; whether the facility is or will be taking corrective action; and whether the Permit includes any compliance schedules. Note also any special features associated with the operation and associated permit conditions.]

The Permittee must comply with all terms and conditions of this Permit. This Permit consists of the conditions contained herein (including those in any attachments) and the applicable regulations contained in 40 CFR Parts 260 through 266, 270, and 124, as specified in the Permit. Applicable regulations are those which are in effect on the date of issuance of the Permit, in accordance with 40 CFR 270.32(c).

This Permit is based on the assumption that the information submitted in the Part B Permit Application attached to the Permittee's letter dated ________, as modified by subsequent amendments [dated ________ and ______], (hereafter referred to as the Application) is accurate and that the facility will be [constructed and] operated as specified in the Application.

Any inaccuracies found in the submitted information may be grounds for the termination, revocation and reissuance, or modification of this Permit in accordance with 40 CFR 270.41, 270.42, and 270.43 and for enforcement action. The Permittee must inform EPA of any deviation from or changes in the information in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

This Permit is effective as of ________, 19___ and shall remain in effect until ________, 19___ unless revoked and reissued under 40 CFR 270.41, terminated under 40 CFR 270.43, or continued in accordance with 270.51(a).

[Note: For land disposal facilities, add the following condition.]

This Permit shall be reviewed by the Regional Administrator five years after the date of Permit issuance or reissuance and shall be modified as necessary, as provided in 40 CFR 270.41. [40 CFR 270.50(d)]

____
Date

[Signature]
[Insert name and title of person authorized to issue the Permit]

MODULE I - GENERAL PERMIT CONDITIONS

[Note: This permit module contains the general conditions required for all RCRA permits by 40 CFR Part 270. This module must be included in all RCRA Permits, except the following optional permit conditions: I.E.12, I.E.14, and I.I.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

I.A. EFFECT OF PERMIT

The Permittee is allowed to **[insert appropriate method: treat, store, and/or dispose on-site]** hazardous waste in accordance with the conditions of this Permit. Any **[storage, treatment, and/or disposal]** of hazardous waste not authorized in this Permit is prohibited. Subject to 40 CFR 270.4, compliance with this Permit generally constitutes compliance, for &2purposes of enforcement, with Subtitle C of RCRA. Issuance of this Permit does not convey any property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local law or regulations. Compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under Sections 3008(a), 3008(h), 3013, or 7003 of RCRA; Sections 106(a), 104 or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), or any other law providing for protection of public health or the environment. [40 CFR 270.4, 270.30(g)]

I.B. PERMIT ACTIONS

I.B.1. Permit Modification, Revocation and Reissuance, and Termination

This Permit may be modified, revoked and reissued, or terminated for cause, as specified in 40 CFR 270.41, 270.42, and 270.43. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee, does not stay the applicability or enforceability of any permit condition. [40 CFR 270.4(a) and 270.30(f)]

I.B.2. Permit Renewal

This Permit may be renewed as specified in 40 CFR 270.30(b) and Permit Condition I.E.2. Review of any application for a Permit renewal shall consider improvements in the state of control and measurement technology, as well as changes in applicable regulations. [40 CFR 270.30(b), HSWA Sec. 212]

I.C. SEVERABILITY

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby. [40 CFR 124.16(a)]

I.D. DEFINITIONS

For purposes of this Permit, terms used herein shall have the same meaning as those in 40 CFR Parts 124, 260, 264, 266, 268, and 270, unless this Permit specifically provides otherwise; where terms are not defined in the regulations or the Permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term. "Regional Administrator" means the Regional Administrator of EPA Region ______, or his designee or authorized representative.

I.E. DUTIES AND REQUIREMENTS

I.E.1. Duty to Comply

The Permittee shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency Permit. Any Permit noncompliance, other than noncompliance authorized by an emergency Permit, constitutes a violation of RCRA and is grounds for enforcement action; for Permit termination, revocation and reissuance, or modification; or for denial of a Permit renewal application. [40 CFR 270.30(a)]

I.E.2. Duty to Reapply

If the Permittee wishes to continue an activity allowed by this Permit after the expiration date of this Permit, the Permittee shall submit a complete application for a new

Permit at least 180 days prior to Permit expiration. [40 CFR 270.10(h), 270.30(b)]

I.E.3. **Permit Expiration**

Pursuant to 40 CFR 270.50, this Permit shall be effective for a fixed term not to exceed ten years. As long as EPA is the Permit-issuing authority, this Permit and all conditions herein will remain in effect beyond the Permit's expiration date, if the Permittee has submitted a timely, complete application (see 40 CFR 270.10, 270.13 through 270.29) and, through no fault of the Permittee, the Regional Administrator has not issued a new Permit, as set forth in 40 CFR 270.51.

I.E.4. **Need to Halt or Reduce Activity Not a Defense**

It shall not be a defense for the Permittee, in an enforcement action that it would have been necessary, to halt or reduce the Permitted activity in order to maintain compliance with the conditions of this Permit. [40 CFR 270.30(c)]

I.E.5. **Duty to Mitigate**

In the event of noncompliance with this Permit, the Permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures, as are reasonable, to prevent significant adverse impacts on human health or the environment. [40 CFR 270.30(d)]

I.E.6. **Proper Operation and Maintenance**

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit. [40 CFR 270.30(e)]

I.E.7. Duty to Provide Information

The Permittee shall furnish to the Regional Administrator, within a reasonable time, any relevant information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this Permit. [40 CFR 264.74(a), 270.30(h)]

I.E.8. Inspection and Entry

Pursuant to 40 CFR 270.30(i), the Permittee shall allow the Regional Administrator, or an authorized representative, upon the presentation of credentials and other documents, as may be required by law, to:

I.E.8.a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;

I.E.8.b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;

I.E.8.c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and

I.E.8.d. Sample or monitor, at reasonable times, for the purposes of assuring Permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

I.E.9. Monitoring and Records

I.E.9.a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method from Appendix I of 40 CFR Part 261 or an equivalent method approved by the Regional Administrator. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste:

Physical/Chemical Methods SW-846, Standard Methods of Wastewater Analysis, or an equivalent method, as specified in the Waste Analysis Plan (See Permit Attachment II-1). [40 CFR 270.30(j)(1)]

I.E.9.b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this Permit, the certification required by 40 CFR 264.73(b)(9), and records of all data used to complete the application for this Permit for a period of at least 3 years from the date of the sample, measurement, report, record, certification, or application. These periods may be extended by request of the Regional Administrator at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. **[For tanks and land treatment, storage, and disposal units: The Permittee shall maintain records from all ground-water monitoring wells and associated ground-water surface elevations for the active life of the facility, and for disposal facilities for the post-closure care period as well.]** [40 CFR 264.74(b) and 270.30(j)(2)]

I.E.9.c. Pursuant to 40 CFR 270.30(j)(3), records of monitoring information shall specify:

i. The dates, exact place, and times of sampling or measurements;

ii. The individuals who performed the sampling or measurements;

iii. The dates analyses were performed;

iv. The individuals who performed the analyses;

v. The analytical techniques or methods used; and

vi. The results of such analyses.

I.E.10. Reporting Planned Changes

The Permittee shall give notice to the Regional Administrator, as soon as possible, of any planned physical alterations or additions to the Permitted facility. [40 CFR 270.30(1)(1)]

I.E.11. Reporting Anticipated Noncompliance

The Permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. [40 CFR 270.30(1)(2)]

I.E.12. Certification of Construction or Modification

[Note: This condition only applies if the facility is new, modified, or contains, or will contain, new units, unit expansions, or modified units. Delete this condition if the Permit is for an existing facility containing existing units only.]

The Permittee may not commence **[insert appropriate method: treatment, storage, or disposal]** of hazardous waste **[insert as appropriate: "at the facility" or "in the modified portion of the facility"]** until the Permittee has submitted to the Regional Administrator, by certified mail or hand delivery, a letter signed by the Permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the Permit; and

I.E.12.a. The Regional Administrator has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the Permit; or

I.E.12.b. The Regional Administrator has either waived the inspection or has not within 15 days notified the Permittee of his intent to inspect. [40 CFR 270.30(1)(2)]

I.E.13. Transfer of Permits

This Permit is not transferable to any person, except after notice to the Regional Administrator. The Regional Administrator may require modification or revocation and reissuance of the Permit pursuant to 40 CFR 270.40. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of 40 CFR Parts 264 and 270 and this Permit. [40 CFR 270.30(1)(3), 264.12(c)]

I.E.14. Twenty-Four Hour Reporting

I.E.14.a. The Permittee shall report to the Regional Administrator any noncompliance which may endanger health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the circumstances. The report shall include the following:

i. Information concerning release of any hazardous waste that may cause an endangerment to public drinking water supplies.

ii. Any information of a release or discharge of hazardous waste, or of a fire or explosion from the hazardous waste management facility which could threaten the environment or human health outside the facility.

I.E.14.b. The description of the occurrence and its cause shall include:

i. Name, address, and telephone number of the owner or operator;

ii. Name, address, and telephone number of the facility;

iii. Date, time, and type of incident;

iv. Name and quantity of materials involved;

v. The extent of injuries, if any;

vi. An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and

vii. Estimated quantity and disposition of recovered material that resulted from the incident.

I.E.14.c. A written submission shall also be provided within five days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period(s) of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and, if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Regional Administrator may waive the five-day written notice requirement in favor of a written report within 15 days. [40 CFR 270.30(1)(6)]

I.E.15. Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise required to be reported above, Permit Conditions I.E.10. - 15., at the time monitoring reports are submitted. The reports shall contain the information listed in Permit Condition I.E.14 [40 CFR 270.30(1)(10)]

I.E.16. Other Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts in the Permit application, or submitted incorrect information in a Permit application or in any report to the Regional Administrator, the Permittee shall promptly submit such facts or information. [40 CFR 270.30(1)(11)]

I.F. SIGNATORY REQUIREMENT

All applications, reports, or information submitted to or requested by the Regional Administrator, his designee, or authorized representative, shall be signed and certified in accordance with 40 CFR 270.11 and 270.30(k).

I.G. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE REGIONAL ADMINISTRATOR

All reports, notifications, or other submissions which are required by this Permit to be sent or given to the Regional Administrator should be sent by certified mail or given to:

____
____
____

[Note: Provide the address and telephone number of the Regional Administrator or appropriate Regional Division Director.]

I.H. CONFIDENTIAL INFORMATION

In accordance with 40 CFR 270.12, the Permittee may claim confidential any information required to be submitted by this Permit.

I.I. DOCUMENTS TO BE SUBMITTED PRIOR TO OPERATION

[Note: Include here: (1) requirements to submit any documents not complete or ready at time of Permit issuance (e.g., an updated Contingency Plan) and (2) the schedules for such submissions.]

1. The Permittee shall submit the following documents to the Regional Administrator by the dates shown:

Document	Due Date

2. Prior to operation, the Permittee shall submit as-built plans of the **[insert units for which plans must be submitted]** __________. At a minimum, these plans shall indicate: ______________________________.

[Note: Insert any items which should be included on the as-built plans. For example, for a container storage area, the as-built plans should include: (1) the dimensions of each storage bay; (2) stacking arrangements for containers; and (3) aisle space in each bay.] [40 CFR 270.32, 270.33]

I.J. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The Permittee shall maintain at the facility, until closure is completed and certified by an independent, registered professional engineer, the following documents and all amendments, revisions and modifications to these documents:

1. Waste Analysis Plan, as required by 40 CFR 264.13 and this Permit.
2. Inspection schedules, as required by 40 CFR 264.15(b)(2) and this Permit.
3. Personnel training documents and records, as required by 40 CFR 264.16(d) and this Permit.
4. Contingency Plan, as required by 40 CFR 264.53(a) and this Permit.
5. Operating record, as required by 40 CFR 264.73 and this Permit.
6. Closure Plan, as required by 40 CFR 264.112(a) and this Permit.

[Note: Under 40 CFR 264.197(c), 264.228(c) and 264.258(c), owners and operators of certain tanks, surface impoundments, and waste piles must have Contingent Closure Plans. If the Permit will require the Permittee to have a Contingent Closure Plan, then add the plan to this list.]

7. Post-Closure Plan, as required by 40 CFR 264.118(a) and this Permit.

[Note: Only owners and operators of disposal units are required to have Post-Closure Plans. Under 40 CFR 264.197(c), 264.228(c) and 264.258(c), owners and operators of certain tanks, surface impoundments, and waste piles must have Contingent Post-Closure Plans. If the Permit will require the Permittee to have a Contingent Post-Closure Plan, then add the plan to this list.]

8. Annually-adjusted cost estimate for facility closure **[and post-closure]**, as required by 40 CFR 264.142(d) **[and 264.144(d)]** and this Permit.

9. All other documents required by Module I, Permit Condition E.9 **[insert as appropriate: and Modules __________, Permit Conditions __________]**.

MODULE II - GENERAL FACILITY CONDITIONS

[Note: This permit module contains conditions covering the general facility requirements of 40 CFR Part 264, Subparts B - H. This module must be included in all RCRA Permits, except that the following Permit conditions are optional: II.B.1, II.B.2, II.G, II.H, II.I.1, II.I.2, II.I.3, II.I.4, II.K, and II.N.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

II.A. DESIGN AND OPERATION OF FACILITY

The Permittee shall construct, maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned, sudden or nonsudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment, as required by 40 CFR 264.31.

II.B. REQUIRED NOTICES

[Note: Permit Condition B.1 should be included in the Permit only if the facility receives waste from a foreign source. Permit Condition B.2 should be included in the Permit only if the facility receives waste from off site. If Permit Condition B.1 is inapplicable, the Permit should specify that the Permittee may not receive hazardous waste from a foreign source. Similarly, if Permit Condition B.2 is inapplicable, the Permit should specify that the Permittee may not receive hazardous waste from off site.]

II.B.1. Hazardous Waste Imports

The Permittee shall notify the Regional Administrator in writing at least four weeks in advance of the date the Permittee expects to receive hazardous waste from a foreign source, as required by 40 CFR 264.12(a). Notice of subsequent shipments of the same waste from the same foreign source in the same calendar year is not required.

II.B.2. Hazardous Waste from Off-Site Sources

When the Permittee is to receive hazardous waste from an off-site source (except where the Permittee is also the generator), he must inform the generator in writing that he has the appropriate Permits, and will accept the waste the generator is shipping. The Permittee must keep a copy of this written notice as part of the operating record. [40 CFR 264.12(b)]

II.C. GENERAL WASTE ANALYSIS

The Permittee shall follow the waste analysis procedures required by 40 CFR 264.13, as described in the attached Waste Analysis Plan, Permit Attachment II-1.

The Permittee shall verify the analysis of each waste stream annually as part of its quality assurance program, in accordance with Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA Publication SW-846, or equivalent methods approved by the Regional Administrator. At a minimum, the Permittee shall maintain proper functional instruments, use approved sampling and analytical methods, verify the validity of sampling and analytical procedures, and perform correct calculations. If the Permittee uses a contract laboratory to perform analyses, then the Permittee shall inform the laboratory in writing that it must operate under the waste analysis conditions set forth in this Permit.

[Note: The waste analysis plan included in the Part B Permit Application should be attached to the Permit. As applicable, the plan must cover the requirements of 40 CFR 264.17, 264.177, 264.198, 264.199, 264.229, 264.230, 264.256, 264.257, 264.272, 264.276, 264.281, 264.282, 264.312, 264.313, 264.314, 264.316, and 264.341.]

II.D. SECURITY

The Permittee shall comply with the security provisions of 40 CFR 264.14(b) **[select either (1) or (2) based upon the information in the Part B Permit Application]** and (c) and Permit Attachment II-2.

[Note: Specific security provisions should be included in the Permit, if necessary, to ensure compliance with 40 CFR 264.14(b). In addition, specific security provisions needed to implement the performance standard in 264.14(a) should be included in the Permit. For example, specify the language of signs required by 264.14(c), if the facility is near the Canadian or Mexican border. If the Permittee successfully demonstrates, in accordance with 40 CFR 264.14(a), that the security requirements in 264.14(b) and (c) are not necessary, a security permit condition is not needed. This demonstration must be documented in the Administrative Record.]

II.E. GENERAL INSPECTION REQUIREMENTS

The Permittee shall follow the inspection schedule set out in Permit Attachment II-3. The Permittee shall remedy any deterioration or malfunction discovered by an inspection, as required by 40 CFR 264.15(c). Records of inspection shall be kept, as required by 40 CFR 264.15(d).

[Note: The inspection schedules included in the Part B Permit Application should be attached to the Permit. As applicable, the specific inspection requirements of 40 CFR 264.174, 264.193(i), 264.195, 264.226(b), 264.254(b), 264.273(g), 264.303(b), 264.347(b) and (c) must be covered by the attached schedules.]

II.F. PERSONNEL TRAINING

The Permittee shall conduct personnel training, as required by 40 CFR 264.16. This training program shall follow the attached outline, Permit Attachment II-4. The Permittee shall maintain training documents and records, as required by 40 CFR 264.16(d) and (e).

[Note: The outline of personnel training included in the Part B Permit Application should be attached to the Permit. It must demonstrate how the Permittee will comply with 264.16.]

II.G. SPECIAL PROVISIONS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

[Note: This condition should be included in the Permit only if the facility handles ignitable, reactive, or incompatible wastes.]

The Permittee shall comply with the requirements of 40 CFR 264.17(a). The Permittee shall follow the procedures for handling ignitable, reactive, and incompatible wastes set forth in Permit Attachment II-5.

[Note: Permits must include specific handling procedures tailored to the types of hazardous wastes to be treated, stored, or disposed at the facility and the types of units in which the wastes will be handled. The procedures described by the Permittee in the Part B Permit Application should be attached to the Permit. In addition, permit conditions specific to the units will be specified in the appropriate module of the Permit.]

II.H. LOCATION STANDARDS

[Note: EPA is preparing guidance on locating hazardous waste management facilities in sensitive locations, such as karst terrain. If a facility will be located in a sensitive area, the Permit Writer can insert permit conditions deemed necessary to protect human health and the environment. For example, more frequent facility inspections, special operating restrictions, or construction of thicker floors or liners could be required. Such permit conditions are authorized by 40 CFR 270.3, 270.32(a), and 270.32(b)(2).]

[Note: For facilities located in a 100-year floodplain, the Permit must either set forth conditions by which the Permittee will meet the requirements of 40 CFR 264.18(b) or contain a compliance schedule (see 40 CFR 270.14(b)(11)(v) and 270.33). These requirements do not apply to existing surface impoundments, waste piles, land treatment units, and landfills if the Permittee has demonstrated, in accordance with 40 CFR 264.18(b)(1)(ii), that there will be no adverse effects on human health or the environment from washout. This demonstration must be documented in the Administrative Record. If the facility is not located in a 100-year floodplain, the Permit Writer should delete this provision from the Permit and re-letter subsequent provisions accordingly (i.e., I becomes H).

Example permit conditions are provided below. The first condition should be placed in the Permit only if the Permittee will use flood proofing and/or flood protection measures to prevent washout during a 100-year flood. The second condition should be included in the Permit only if the Permittee will implement procedures to remove the waste from the facility prior to arrival of 100-year flood waters.]

The Permittee shall [construct,] operate, and maintain the facility to prevent washout of any hazardous waste by a 100-year flood, as required by 40 CFR 264.18(b)(1) and as specified in the attached plans and specifications, Permit Attachment II-6.

In the event of a 100-year flood, the Permittee shall remove all hazardous waste, before flood waters can reach the facility, to a location where the wastes will not be vulnerable to the flood waters, as required by 40 CFR 264.18(b)(1)(i) and in accordance with the attached 100-year flood response procedures, Permit Attachment II-7.

II.I. PREPAREDNESS AND PREVENTION

II.I.1. Required Equipment

At a minimum, the Permittee shall maintain at the facility the equipment set forth in the Contingency Plan, Permit Attachment II-8, as required by 40 CFR 264.32.

[Note: The list of equipment required by 264.52(e) to be in the Contingency Plan must meet the requirements of 264.32. If the Permittee has successfully demonstrated, in accordance with 40 CFR 264.32, that any of the equipment is not required, the decision should be documented in the Administrative Record and Permit Condition II.I.1 should be deleted.]

II.I.2. Testing and Maintenance of Equipment

The Permittee shall test and maintain the equipment specified in Permit Condition II.I.1, as necessary, to assure its proper operation in time of emergency, as required by 40 CFR 264.33.

[Note: Specific testing and maintenance procedures needed to implement this condition should be included in the inspection schedule, Permit Condition II.E.]

II.I.3. Access to Communications or Alarm System

The Permittee shall maintain access to the communications or alarm system, as required by 40 CFR 264.34.

[Note: If the Permittee has successfully demonstrated that such a device is not required under 40 CFR 264.32, the decision should be documented in the Administrative Record and Permit Condition I.3 should be deleted.]

II.I.4. Required Aisle Space

At a minimum, the Permittee shall maintain aisle space, as required by 40 CFR 264.35 and the attached plans and specifications, Permit Attachment II-8A.

[Note: If the Permittee has successfully demonstrated that aisle space is not needed, the decision should be documented in the Administrative Record. The "plans and specifications" to be referenced here generally will be the design plans and specifications for the hazardous waste management units.]

II.I.5. Arrangements with Local Authorities

The Permittee shall maintain arrangements with state and local authorities, as required by 40 CFR 264.37. If state or local officials refuse to enter into preparedness and prevention arrangements with the Permittee, the Permittee must document this refusal in the operating record.

II.J. CONTINGENCY PLAN

II.J.1. Implementation of Plan

The Permittee shall immediately carry out the provisions of the Contingency Plan, Permit Attachment II-8, whenever there is a fire, explosion, or release of hazardous waste or constituents which could threaten human health or the environment.

[Note: The contingency plan included in the Part B Permit Application should be attached to the Permit. As applicable, the plan must cover the requirements of 40 CFR 264.200, and 264.227(c).]

II.J.2. Copies of Plan

The Permittee shall comply with the requirements of 40 CFR 264.53.

II.J.3. Amendments to Plan

The Permittee shall review and immediately amend, if necessary, the Contingency Plan, as required by 40 CFR 264.54.

II.J.4. Emergency Coordinator

A trained emergency coordinator shall be available at all times in case of an emergency, as required by 40 CFR 264.55.

[Note: For new facilities, add the following sentence to Permit Condition II.J.4.]

The names, addresses, and phone numbers of all persons qualified to act as emergency coordinators shall be supplied to the Regional Administrator at the time of certification. [40 CFR 264.52(d)].

II.K. MANIFEST SYSTEM

The Permittee shall comply with the manifest requirements of 40 CFR 264.71, 264.72, and 264.76.

[Note: This condition should be included in the Permit only if the facility accepts off-site waste.]

II.L. RECORDKEEPING AND REPORTING

In addition to the recordkeeping and reporting requirements specified elsewhere in this Permit, the Permittee shall do the following:

II.L.1. Operating Record

The Permittee shall maintain a written operating record at the facility, in accordance with 40 CFR 264.73.

II.L.2. Biennial Report

The Permittee shall comply with the biennial reporting requirements of 40 CFR 264.75.

II.M. GENERAL CLOSURE REQUIREMENTS

[Note: Owners and operators of certain tank systems, surface impoundments, and waste piles are required to have contingent closure plans by 40 CFR 264.197(c), 264.228(c), and 264.258(c), respectively. For Permits for these facilities, insert "Contingent Closure Plan" after Closure Plan and append the Contingent Closure Plan as Permit Attachment II-10. Be sure to renumber subsequent attachments.]

II.M.1. Performance Standard

The Permittee shall close the facility, as required by 40 CFR 264.111 and in accordance with the Closure Plan, Permit Attachment II-9.

[Note: The Closure Plan must meet the requirements of 40 CFR 264.112(a) and (b). The specific closure requirements of 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, and 264.351 also must be covered by the attached plan.]

II.M.2. Amendment to Closure Plan

The Permittee shall amend the Closure Plan, in accordance with 40 CFR 264.112(c), whenever necessary.

II.M.3. Notification of Closure

The Permittee shall notify the Regional Administrator in writing at least 60 days prior to the date on which he expects to begin closure of any of the following: **[insert as appropriate: surface impoundment, waste pile, land treatment unit, or landfill]** or final closure of the facility, as required by 40 CFR 264.112(d).

[Note: Permit Condition II.M.3 should be used for facilities using surface impoundments, waste piles, land treatment units, or landfills. For facilities using only

tanks, containers, or incinerators, substitute the following condition.]

The Permittee shall notify the Regional Administrator in writing at least 45 days prior to the date on which he expects to begin final closure of the facility, as required by 40 CFR 264.112(d).

II.M.4. Time Allowed For Closure

After receiving the final volume of hazardous waste, the Permittee shall treat, remove from the unit or facility, or dispose of on site all hazardous waste and shall complete closure activities, in accordance with 40 CFR 264.113 and the schedules specified in the Closure Plan, Permit Attachment II-9.

[Note: If the Permittee is granted a longer time frame for treating, removing, or disposing of waste or for completing closure activities, the basis for granting the extra time must be documented in the Administrative Record.]

II.M.5. Disposal or Decontamination of Equipment, Structures, and Soils

The Permittee shall decontaminate [and/or] dispose of all contaminated equipment, structures, and soils, as required by 40 CFR 264.114 and the Closure Plan, Permit Attachment II-9.

II.M.6. Certification of Closure

The Permittee shall certify that the facility has been closed in accordance with the specifications in the Closure Plan, as required by 40 CFR 264.115.

II.M.7. Survey Plat

The Permittee shall submit a survey plat no later than the submission of certification of closure of each hazardous waste disposal unit, in accordance with 40 CFR 264.116.

[Note: This Permit condition should be included only if the facility contains hazardous waste disposal units.]

II.N. GENERAL POST-CLOSURE REQUIREMENTS

[Note: Owners and operators of certain tank systems, surface impoundments, and waste piles are required to have contingent post-closure plans by 40 CFR 264.197(c), 264.228(c), and 264.258(c), respectively. For Permits for these facilities, insert "Contingent Post-Closure Plan" after Post-Closure Plan and append the Contingent Post-Closure Plan as Permit Attachment II-12. Be sure to renumber subsequent attachments.]

II.N.1. Post-Closure Care Period

The Permittee shall begin post-closure care for each **[insert as appropriate: tank system, surface impoundment, waste pile, land treatment unit, landfill]** after completion of closure of the unit and continue for 30 years after that date. Post-closure care shall be in accordance with 40 CFR 264.117 and the Post-Closure Plan, Permit Attachment II-11.

[Note: The Post-Closure Plan included in the Part B Permit Application should be attached to the Permit. It must meet the requirements of 40 CFR 264.118(a) and (b). The specific post-closure requirements of 264.197, 264.228, 264.258, 264.280, and 264.310 also must be covered by the attached plan.]

II.N.2. Post-Closure Security

The Permittee shall maintain security at the facility during the post-closure care period, in accordance with the Post-Closure Plan, Permit Attachment II-11, and 40 CFR 264.117(b).

[Note: This condition should be included in the Permit only if hazardous wastes may remain exposed after completion of closure, or access by the public or domestic livestock may pose a hazard to human health.]

II.N.3. Amendment to Post-Closure Plan

The Permittee shall amend the Post-Closure Plan in accordance with 40 CFR 264.118(d), whenever necessary.

II.N.4. Post-Closure Notices

II.N.4.a. No later than 60 days after certification of closure of each hazardous waste disposal unit, the Permittee shall submit records of the type, location, and quantity of hazardous waste disposed within each cell or disposal unit, in accordance with 40 CFR 264.119(a).

II.N.4.b. Within 60 days of certification of closure of the first hazardous waste disposal unit and the last hazardous waste disposal unit, the Permittee shall do the following:

i. Record a notation on the deed to the facility property, in accordance with 40 CFR 264.119(b)(1).

ii. Submit a certification that a notation, in accordance with 40 CFR 264.119(b)(2), has been recorded.

II.N.4.c. The Permittee shall request and obtain a Permit modification prior to post-closure removal of hazardous wastes, hazardous waste residues, liners, or contaminated soils, in accordance with 40 CFR 264.119(c).

II.N.5. Certification of Completion of Post-Closure Care

The Permittee shall certify that the post-closure care period was performed in accordance with the specifications in the Post-Closure Plan, as required by 40 CFR 264.120.

II.O. COST ESTIMATE FOR FACILITY CLOSURE [AND POST-CLOSURE]

II.O.1. The Permittee's most recent closure **[insert as applicable "and post-closure"]** cost estimate, prepared in accordance with 40 CFR 264.142 264.144, 264.197(c)(3) and (5), 264.228(c)(2), and 264.258(c)(2], **[is/are]** specified in Permit Attachment II-11.

II.O.2. The Permittee must adjust the closure **[and post-closure]** cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with 40 CFR 264.143 **[and 264.145]** and Permit Condition II.P or when using an approved state-required mechanism, upon such date as required by the state. [40 CFR 264.142(b)]

[Note: If the Permittee is using the financial test or corporate guarantee, substitute the following condition.]

The Permittee must adjust the closure cost estimate **[and post-closure cost estimate]** for inflation within 30 days after the close of the firm's fiscal year and before submission of updated information to the Regional Administrator, as specified in 40 CFR 264.142(b) **[and 264.144(b)]**.

II.O.3. The Permittee must revise the closure cost estimate **[and post-closure cost estimate]** whenever there is a change in the facility's Closure Plan **[and Post-Closure Plan]**, as required by 40 CFR 264.142(c) **[and 264.144(c)]**.

II.O.4. The Permittee must keep at the facility the latest closure cost estimate **[and post-closure cost estimate]** as required by 40 CFR 264.142(d) **[and 264.144(d)]**.

II.P. FINANCIAL ASSURANCE FOR FACILITY CLOSURE [AND POST-CLOSURE]

The Permittee shall demonstrate continuous compliance with 40 CFR **[insert as appropriate 264.143, 264.145, 264.146]** by providing documentation of financial assurance, as required by 40 CFR 264.151 or 264.149, in at least the amount of the cost estimates required by Permit Condition II.O. Changes in financial assurance mechanisms must be approved by the Regional Administrator pursuant to 40 CFR 264.143 [,264.145] or 264.149.

[Note: For new facilities, the Permittee shall demonstrate compliance with this permit condition by submitting the required documentation to the Regional Administrator at least 60 days before first receiving hazardous waste for treatment, storage or disposal. [See, for example, 40 CFR 264.143(a)(1).] The Permittee's financial assurance must be effective prior to the Permittee's first receipt of hazardous waste.]

II.Q. LIABILITY REQUIREMENTS

The Permittee shall demonstrate continuous compliance with the requirement of 40 CFR 264.147(a) to have and maintain liability coverage for sudden and accidental occurrences in the amount of at least $1 million per occurrence, with an annual aggregate of at least $2 million, exclusive of legal defense costs.

[Note: For facilities containing surface impoundments, landfills, and land treatment units, add the following condition.]

The Permittee also shall demonstrate continuous compliance with the 40 CFR 264.147(b) requirement to have and maintain liability coverage for nonsudden accidental occurrences in the amount of at least $3 million per occurrence, with an annual aggregate of at least $6 million, exclusive of legal defense costs.

[Note: The Regional Administrator may grant a variance from the above levels of financial responsibility in accordance with 40 CFR 264.147(c) and (d). For new facilities, the Permittee shall demonstrate its compliance with this permit condition by submitting the required documentation to the Regional Administrator at least 60 days before first receiving hazardous waste for treatment or storage. The Permittee's liability coverage must be effective before the Permittee's first receipt of hazardous waste.]

II.R. INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR FINANCIAL INSTITUTIONS

The Permittee shall comply with 40 CFR 264.148, whenever necessary.

PERMIT ATTACHMENTS REFERENCED IN MODULE II - GENERAL FACILITY CONDITIONS

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
I-1	Waste Analysis Plan
II-2	Security Plan
II-3	Inspection Schedule
II-4	Personnel Training Outline
II-5	Procedures for Handling Ignitable, Reactive, or Incompatible Waste
II-6	Flood Proofing/Flood Protection Plans and Specifications
II-7	100-Year Flood Response Procedures
II-8	Contingency Plan
II-8A	Plans and Specifications showing the spacing of aisles
II-9	Closure Plan
II-10	Contingent Closure Plan
II-11	Post-Closure Plan
II-12	Contingent Post-Closure Plan
II-13	Closure Cost Estimate
II-14	Post-Closure Cost Estimate

MODULE III - CONTAINERS

[Note: This permit module should be included when the Permittee is storing or treating hazardous waste in containers. The Permit Writer should specify in the title whether this module is for storage or treatment in containers. Waste analysis requirements (40 CFR 264.13) and closure requirements (40 CFR 264.178) for storage and treatment in containers normally are contained as attachments to the Permit in the Waste Analysis Plan and Closure Plan.]

[Note: In general, a single permit module should be used if multiple container areas will be covered by the same Permit for a given facility. However, it is acceptable to include multiple container modules if, in the Permit Writer's judgment, the characteristics and permit conditions for each area are sufficiently different to warrant multiple modules.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

III.A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information: description and dimensions of each container area, maximum amount and type(s) of wastes that may be handled, description of the containers used, description and capacities of primary and secondary containment systems, any unique or special features associated with the activity, and a reference to any special permit conditions.]

III.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

III.B.1. The Permittee may ________ [specify store and/or treat] the following wastes in containers at the facility, subject to the terms of this Permit and as follows:

Description of Hazardous Waste	EPA Hazardous Waste Number	Maximum Volume	Maximum Number and Type of Containers
[Example: Waste Halogenated Solvents	F001	11,000 gallons	200 55-gal. drums]

[Note: Under "Description of Hazardous Waste," the Permit Writer should provide only a brief generic description, not comprehensive

characteristics, where a Hazardous Waste Number is provided for reference.]

[Note: If the location is critical, the Permit should also specifically identify the location (e.g., room or storage bay) in which containers of waste may be stored and/or treated. For example, incompatible wastes might be restricted to designated storage bays.]

III.B.2. The Permittee is prohibited from storing or treating hazardous waste that is not identified in Permit Condition III.B.1.

[Note: The Permit Writer may also include here a list of specific wastes or materials that are prohibited.]

III.C. CONDITION OF CONTAINERS

If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the Permittee shall transfer the hazardous waste from such container to a container that is in good condition or otherwise manage the waste in compliance with the conditions of this Permit. [40 CFR 264.171]

III.D. COMPATIBILITY OF WASTE WITH CONTAINERS

The Permittee shall assure that the ability of the container to contain the waste is not impaired, as required. [40 CFR 264.172]

[Note: Specific procedures (e.g., testing of waste) or equipment required to assure compliance with Permit Condition III.D. should be included in the Permit by inserting a specific condition or by attaching procedures or equipment lists from the Part B Permit Application.]

III.E. MANAGEMENT OF CONTAINERS

The Permittee shall keep all containers closed during storage, except when it is necessary to add or remove waste, and shall not open, handle, or store containers in a manner which may rupture the container or cause it to leak. [40 CFR 264.173]

III.F. CONTAINMENT SYSTEMS

[Note: This condition should be included in the Permit only if the container area must have a secondary containment system under 40 CFR 264.175.]

The Permittee shall [construct and] maintain the containment system in accordance with the attached plans and specifications, contained in Permit Attachment III-1. [40 CFR 264.175]

III.G. INSPECTION SCHEDULES AND PROCEDURES

The Permittee shall inspect the container area weekly, in accordance with the Inspection Schedule, Permit Attachment II-3, to detect leaking containers and deterioration of containers and the containment system caused by corrosion and other factors. [40 CFR 264.174]

III.H. RECORDKEEPING

The Permittee shall place the results of all waste analyses and trial tests **[and any other documentation showing compliance with the requirements of Permit Conditions III.K.1 and III.K.2 and 40 CFR 264.17(b) and 264.177]** in the facility operating record. [40 CFR 264.73]

III.I. CLOSURE

At closure of the container area, the Permittee shall remove all hazardous waste and hazardous waste residues from the containment system, in accordance with the procedures in the Closure Plan, Permit Attachment II-9. [40 CFR 264.178]

III.J. SPECIAL CONTAINER PROVISIONS FOR IGNITABLE OR REACTIVE WASTE

[Note: Permit Condition III.J should be included in the Permit only if ignitable or reactive wastes will be stored or treated in containers or is of concern (i.e., not prohibited in III.B.2.]

III.J.1. The Permittee shall not locate containers holding ignitable or reactive waste within 15 meters (50 feet) of the facility's property line. [40 CFR 264.176]

III.J.2. The Permittee shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste and follow the procedures specified in Permit Attachment III-2. [40 CFR 264.17(a) and 264.176]

III.K. SPECIAL CONTAINER PROVISIONS FOR INCOMPATIBLE WASTE

[Note: Permit Condition III.K should be included in the Permit only if incompatible wastes will be stored or is of concern at the facility.]

III.K.1. The Permittee shall not place incompatible wastes, or incompatible wastes and materials, in the same container unless the procedures in Permit Attachment III-3 are followed. [40 CFR 264.177(a)]

III.K.2. The Permittee shall not place hazardous waste in an unwashed container that previously held an incompatible waste or material. [40 CFR 264.177(b)]

III.K.3. The Permittee shall separate containers of incompatible wastes. [40 CFR 264.177(c)]

[Note: The attached plans or procedures should address the layout of the hazardous waste storage facility, aisle space, and stacking height of containers holding ignitable and reactive wastes. Note that the National Fire Protection Association's Flammable and Combustible Liquids Code recommends that containers of ignitable waste be stored no more than two high.]

III.L. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this section if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating Permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee before the Permit is issued are deferred for good cause until after Permit issuance. Appropriate compliance schedules included in the Part B Permit Application should be attached to, or incorporated in, the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity and one identifying the milestone or completion dates. The following is an example of a condition that may apply for a container area.]

The Permittee shall provide the following information to the Regional Administrator:

Item	Date Due to the Regional Administrator
[Example:	
1. Documentation that the surface of the containment system has been refinished with an impervious coating using the materials described in Specifications Section 19A, dated 3/18/88	**June 26, 1989]**

PERMIT ATTACHMENTS REFERENCED IN MODULE III - CONTAINERS

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-3	Facility Inspection Schedule
II-9	Closure Plan
III-1	Secondary Containment Plans and Specifications
III-2	Ignitable or Reactive Waste Procedures
III-3	Incompatible Waste Procedures

MODULE IV - TANKS

[Note: This permit module should be included when the Permittee is storing or treating hazardous waste in tanks. The Permit Writer should specify in the title whether the module is for storage and/or treatment in tank systems. This module is based on the federal tank rule published in the Federal Register on July 14, 1986, and on relevant guidances and policies issued to implement this rule. The definitions of existing and new tank systems under that rule are different from the definitions of existing and new facilities for the purposes of determining eligibility for interim status. Existing tank systems are defined as tank systems in operation on July 14, 1986, or for which installation commenced prior to July 14, 1986. A new tank system is defined as a tank system for which installation commenced after July 14, 1986.]

[Note: Waste analysis requirements (40 CFR 264.13) and closure requirements (40 CFR 264.197) for tank systems are normally contained as attachments to the Permit in the Waste Analysis Plan and Closure Plan. Post-closure requirements for tank systems, when necessary (40 CFR 264.117), are contained in the Post-Closure permit module (Module XIII).]

[Note: In general, a single permit module should be used if multiple tank systems will be covered by the same Permit for a given facility. However, it is acceptable to include multiple tank system modules if, in the Permit Writer's judgment, the characteristics and permit conditions for each tank system are sufficiently different to warrant multiple modules.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

IV.A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information: brief description of each tank system, including feed systems, safety cut-offs, bypass systems, and pressure controls (e.g., valves); capacity of each tank system; whether the tank system (including ancillary equipment) is aboveground, inground, underground, or onground; age of existing tank system; general description of types of wastes stored and/or treated; brief description of any treatment processes; description and capacity of the secondary containment system for each tank system; any unique or special features associated with the activity; and a reference to any special permit conditions.]

IV.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

IV.B.1. The Permittee may ______ [specify store and/or treat] a total volume of ______ gallons of hazardous waste in ______ tanks [specify the number of tanks], subject to the terms of this Permit and as follows:

Tank No.	Capacity (Gallons)	Dimensions of Tank	Secondary Containment Required	Description of Hazardous Waste	Hazardous Waste No.
[Example:					
Tank System A:					
CF-101	**8,000**	**8 ft(diam) x 21 ft**	**yes-in place**	**Waste organic solvents**	**F005**
Tank System B:					
CF-102	**8,000**	**8 ft(diam) x 21 ft**	**yes-due by March 18, 1990**	**Wastewater treatment sludge**	**F006**
CF-103	**10,000**	**10 ft(diam) x 17 ft**	**yes-due by March 18, 1990**	**Wastewater treatment sludge**	**F006]**

[Note: Under "Description of Hazardous Waste," the Permit Writer should provide only a brief generic description, not comprehensive characteristics, where a Hazardous Waste Number is provided for reference.]

IV.B.2. The Permittee is prohibited from storing or treating hazardous waste that is not identified in Permit Condition IV.B.1.

[Note: The Permit Writer may also include here a list of specific wastes or materials that are prohibited.]

IV.C. SECONDARY CONTAINMENT AND INTEGRITY ASSESSMENTS

[Note: The Permit Writer should include Permit Condition IV.C.1. for existing tank systems that do not have secondary containment. If the Permittee is granted a variance from secondary containment requirements according to 40 CFR 264.193(g), Permit Condition IV.C.2. applies; otherwise, the Permittee is subject to Permit Conditions IV.C.3. and IV.C.4. for existing tanks (tanks used solely to store or treat hazardous waste, which contain no free liquids and are situated inside a building with an impermeable floor, and tanks, including sumps, as defined in 40

CFR 260.10, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes are exempt from secondary containment requirements.] [40 CFR 264.190(a)]

IV.C.1. For tank systems used to store or treat materials that are defined as hazardous waste in the future, the Permittee must obtain a written assessment of the existing tank system integrity within 12 months from the date the waste is defined as hazardous. [40 CFR 264.191(c)] The assessment shall be certified by an independent, qualified, registered professional engineer. [40 CFR 264.191(a) and (b)]

IV.C.2. The Permittee shall design, construct, operate, and maintain the tank system according to the detailed plans and reports contained in Permit Attachment IV-1 to maintain the variance from the requirements for secondary containment. [40 CFR 264.193(g) and 264.193(h)(4)]

[Note: The Permit Attachment for this condition must contain the detailed plans and engineering and hydrogeologic reports contained in the Part B Permit Application that demonstrate how the Permittee will meet the applicable requirements of 40 CFR 264.193(g).]

IV.C.3. The Permittee shall design, construct, and operate the secondary containment system, in accordance with the detailed design plans and descriptions contained in Permit Attachment IV-2. [40 CFR 264.193(b)-(f)]

[Note: The Permit Attachment for this condition must contain the detailed plans and descriptions contained in the Part B Permit Application that demonstrate how the Permittee will meet the requirements of 40 CFR 264.193(b)-(f).]

[Note: Because the time frame for requiring secondary containment varies with the age of the tank, available documentation regarding the tank age, or the waste handled, the Permit Writer should specify the date by which secondary containment is required for each tank system. The following are the required time frames for the various scenarios: [40 CFR 264.193(a)]

New tank systems or components - prior to their being put into service.

Existing tanks handling F020, F021, F022, F023, F026, and/or F027 Wastes - no later than January 12, 1989.

Existing tank systems with documented age - no later than January 12, 1989 or when the system reaches 15 years of age, whichever comes later.

Existing tank systems where the age cannot be documented - no later than January 12, 1995; however, if the age of the facility is greater than seven years, then secondary containment must be provided by the time the facility reaches 15 years of age or by January 12, 1989, whichever comes later.

For tank systems that store or treat materials that are defined hazardous in the future - within the time intervals described above, except that the date the material is defined a hazardous waste, plus two years, shall be used in place of January 12, 1989.]

IV.C.4. The Permittee shall comply with the following conditions until such time as secondary containment that meets the requirements of 40 CFR 264.193 is provided:

[Note: Include Permit Conditions IV.C.4.a., IV.C.4.c., and IV.C.4.d. for non-enterable underground tanks; include Permit Conditions IV.C.4.b., IV.C.4.c., and IV.C.4.d. for tank systems comprised of other than non-enterable underground tanks.]

IV.C.4.a. For non-enterable underground tanks, a leak test (or other tank integrity method as approved or required by the Regional Administrator) shall be conducted annually using the procedures in Permit Attachment IV-3. [40 CFR 264.193(i)(1)]

[Note: The Permit Writer may specify more frequent testing, if it is warranted, given the design, condition, and operation of the system.]

IV.C.4.b. For other than non-enterable underground tanks, a **leak test (or other tank integrity method as approved or required by the Regional Administrator) must be** conducted __________ **(The Permit Writer shall establish the frequency.)** using the procedures in Permit Attachment IV-3. [40 CFR 264.193(i)(2)]

IV.C.4.c. For ancillary equipment, a leak test (or other integrity method as approved by the Regional Administrator) must be conducted annually using the procedures in Permit Attachment IV-3. [40 CFR 264.193(i)(3)]

[Note: The Permit Writer may specify more frequent testing, if it is warranted, given the design, condition, and operation of the system. The leak test, internal inspection, or other integrity examination must be performed during the 12-month period prior to the due date of the integrity assessment. The date the original leak test, internal inspection, etc. was performed becomes the anniversary date to perform subsequent tests.]

IV.C.4.d. If a tank system or component is found to be leaking or unfit for use as a result of the leak test or assessment, the Permittee shall comply with Permit Condition IV.E. of this Permit and notify the Regional Administrator, in accordance with Permit Condition IV.G. of this Permit. [40 CFR 264.193(i)(4)]

IV.D. OPERATING REQUIREMENTS

IV.D.1. The Permittee shall not place hazardous wastes or treatment reagents in the tank system if they could cause the tank, its ancillary equipment, or a containment system to rupture, leak, corrode, or otherwise fail. [40 CFR 264.194(a)]

IV.D.2. The Permittee shall prevent spills and overflows from the tank or containment systems using the methods described in Permit Attachment IV-4. [40 CFR 264.194(b)]

IV.E. RESPONSE TO LEAKS OR SPILLS

In the event of a leak or a spill from the tank system, from a secondary containment system, or if a system becomes unfit for continued use, the Permittee shall remove the system from service immediately and complete the following actions: [40 CFR 264.196(a)-(f)]

IV.E.1. Stop the flow of hazardous waste into the system and inspect the system to determine the cause of the release.

IV.E.2. Remove waste and accumulated precipitation from the system within 24 hours of the detection of the leak to prevent further release and to allow inspection and repair of the system. If the Permittee finds that it will be impossible to meet this time period, the Permittee shall notify the Regional Administrator and demonstrate that the longer time period is required.

[Note: The permit condition may specify a time period that is more than 24 hrs. This would be part of the approved design.]

If the collected material is a RCRA hazardous waste, it must be managed in accordance with all applicable requirements of 40 CFR Parts 262-264. The Permittee shall note that if the collected material is discharged through a point source to U.S. waters or to a POTW, it is subject to requirements of the Clean Water Act. If the collected material is released to the environment, it may be subject to reporting under 40 CFR Part 302.

IV.E.3. Contain visible releases to the environment. The Permittee shall immediately conduct a visual inspection of all releases to the environment and based on that inspection: (1) prevent further migration of the leak or spill to soils or surface water and (2) remove and properly dispose of any visible contamination of the soil or surface water.

IV.E.4. Close the system in accordance with the Closure Plan, Permit Attachment II-9, unless the following actions are taken:

[Note: Include Permit Condition IV.E.4.a. for all tank systems; Permit Condition IV.E.4.b. for tank systems with secondary containment; Permit Condition IV.E.4.c. for tank systems with components below ground that do not have secondary containment; Permit Condition IV.E.4.d. for tank systems with aboveground components that do not have secondary containment; and Permit Condition IV.E.4.e. for tank systems with components that are not readily accessible for visual inspection (e.g., the bottom of an inground or onground tank). Permit Condition IV.E.4.f. need only be used when Permit Conditions IV.E.4.c., IV.E.4.d., or IV.E.4.e. apply.]

IV.E.4.a. For a release caused by a spill that has not damaged the integrity of the system, the Permittee shall remove the released waste and make any necessary repairs to fully restore the integrity of the system before returning the tank system to service.

IV.E.4.b. For a release caused by a leak from the primary tank system to the secondary containment system, the Permittee shall repair the primary system prior to returning it to service.

IV.E.4.c. For a release to the environment caused by a leak from a component of the tank system that is below ground and does not have secondary containment, the Permittee must provide this component with secondary containment that meets the requirements of 40 CFR 264.193 before the component can be returned to service.

IV.E.4.d. For a release to the environment caused by a leak from the aboveground portion of the tank system that does not have secondary containment, and can be visually inspected, the Permittee shall repair the tank system before returning it to service.

IV.E.4.e. For a release to the environment caused by a leak from the portion of the tank system component that is not readily available for visual inspection, the Permittee shall provide secondary containment that meets the requirements of 40 CFR 264.193 before the component can be returned to service.

IV.E.4.f. If the Permittee replaces a component of the tank system to eliminate the leak, that component must satisfy the requirements for new tank systems or components in 40 CFR 264.192 and CFR 40 264.193.

IV.E.5. For all major repairs to eliminate leaks or restore the integrity of the tank system, the Permittee must obtain a certification by an independent, qualified, registered professional engineer that the repaired system is capable of handling hazardous wastes without release for the intended life of the system before returning the system to service. Examples of major repairs are: installation of an internal liner, repair of a ruptured tank, or repair or replacement of a secondary containment vault.

IV.F. INSPECTION SCHEDULES AND PROCEDURES

IV.F.1. The Permittee shall inspect the tank systems, in accordance with the Inspection Schedule, Permit Attachment II-3, and shall complete the items in Permit Conditions IV.F.2. and IV.F.3. as part of those inspections:

IV.F.2. The Permittee shall inspect the overfill controls, in accordance with the schedule in Permit Attachment II-3. [40 CFR 264.195(a)]

IV.F.3. The Permittee shall inspect the following components of the tank system once each operating day: [40 CFR 264.195(b)]

IV.F.3.a. Aboveground portions of the tank system, if any, to detect corrosion or releases of waste;

IV.F.3.b. Data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design;

IV.F.3.c. Construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system, to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

[Note: The Permit Writer may require more frequent inspections for the tank system, if necessary.]

[Note: The Permit Writer should include Permit Condition IV.F.4. only if a cathodic protection system is used.]

IV.F.4. The Permittee shall inspect cathodic protection systems, in accordance with the following schedule: [40 CFR 264.195(c)]

a. The proper operation of the cathodic protection system must be confirmed within six months from initial installation and annually thereafter and

b. All sources of impressed current must be inspected and tested every other month.

[Note: The Permit Writer may require more frequent inspections for cathodic protection systems, if necessary.]

IV.F.5. The Permittee shall document compliance with Permit Conditions IV.F.2. through IV.F.4. and place this documentation in the operating record for the facility. [40 CFR 264.195(d)]

IV.G. RECORDKEEPING AND REPORTING

IV.G.1. The Permittee shall report to the Regional Administrator, within 24 hours of detection, when a leak or spill occurs from the tank system or secondary containment system to the environment. [40 CFR 264.196(d)(1)] (A leak or spill of one pound or less of hazardous waste, that is immediately contained and cleaned-up, need not be reported.) [40 CFR 264.196(d)(2)] (Releases that are contained within a secondary containment system need not be reported). If the Permittee has reported the release pursuant to 40 CFR Part 302, this report satisfies the requirements of this Permit Condition. [40 CFR 264.196(d)(1)]

IV.G.2. Within 30 days of detecting a release to the environment from the tank system or secondary containment system, the Permittee shall report the following information to the Regional Administrator: [40 CFR 264.196(d)(3)]

a. Likely route of migration of the release;

b. Characteristics of the surrounding soil (including soil composition, geology, hydrogeology, and climate);

c. Results of any monitoring or sampling conducted in connection with the release. If the Permittee finds it will be impossible to meet this time period, the Permittee should provide the Regional Administrator with a schedule of when the results will be available. This schedule must be provided before the required 30-day submittal period expires;

d. Proximity of downgradient drinking water, surface water, and populated areas; and

e. Description of response actions taken or planned.

IV.G.3. The Permittee shall submit to the Regional Administrator all certifications of major repairs to correct leaks within seven days from returning the tank system to use. [40 CFR 264.196(f)]

[Note: The Permit Writer should include Permit Condition IV.G.4. for new tank systems or components, and Permit Condition IV.G.5. for existing tank systems without secondary containment.]

IV.G.4. The Permittee shall obtain, and keep on file at the facility, the written statements by those persons required to certify the design and installation of the tank system. [40 CFR 264.192(g)]

IV.G.5. The Permittee shall keep on file at the facility the written assessment of the tank system's integrity. [40 CFR 264.191(a)]

IV.G.6. The Permittee shall maintain at the facility a record of the results of leak tests and integrity tests conducted, in accordance with Permit Conditions IV.C.4.a. through IV.C.4.c.

IV.H. CLOSURE AND POST-CLOSURE CARE

[Note: Permit Condition IV.H.1. applies to all tanks. The Permit Writer should include Permit Condition IV.H.2. in all tank permits as a contingency in case the tank cannot be "clean" closed at the time of closure.]

IV.H.1. At closure of the tank system(s), the Permittee shall follow the procedures in the Closure Plan, Permit Attachment II-9. [40 CFR 264.197(a)]

[Note: Since all tanks are required to seek clean closure, the Closure Plan must address clean closure, but may also need a contingent closure plan referenced in Permit Condition IV.H.2.]

IV.H.2. If the Permittee demonstrates that not all contaminated soils can be practically removed or decontaminated, in accordance with the Closure Plan, then the Permittee shall close the tank system(s) and perform post-closure care following the contingent procedures in the Closure Plan and in the Post-Closure Plan, Permit Attachment II-11. [40 CFR 264.197(b) and (c)]

[Note: A contingent post-closure plan is required at the time a permit is issued for tank systems that do not have secondary containment.]

[Note: The Permit Writer should use the Post-Closure Permit Module (Module XIII) to define the requirements that the Permittee shall follow for post-closure care.]

IV.I. SPECIAL TANK PROVISIONS FOR IGNITABLE OR REACTIVE WASTES

[Note: The Permit Writer should include this section if ignitable or reactive wastes are treated or stored in the tank system.]

IV.I.1. The Permittee shall not place ignitable or reactive waste in the tank system or in the secondary containment system, unless the procedures specified in Permit Attachment IV-5 are followed. [40 CFR 264.198(a)]

[Note: The Permit Writer should ensure that Permit Attachment IV-5 clearly documents how the Permittee will comply with the requirements of 40 CFR 264.198(a). Per 40 CFR 264.198(a), the Permittee shall not place ignitable or reactive waste in the tank system, unless the waste is treated, rendered, or mixed before or immediately after placement in the tank system, so that: (a) the resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste in 40 CFR 261.21 or 261.23 (The General Requirements for Ignitable and Reactive Wastes) and the precautions in 40 CFR 264.17(b) are complied with; (b) the waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react; or (c) the tank system is used solely for emergencies.]

IV.I.2. The Permittee shall comply with the requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon, as required in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code" (1977 or 1981). [40 CFR 264.198(b)]

IV.J. SPECIAL TANK PROVISIONS FOR INCOMPATIBLE WASTES

[Note: The Permit Writer should include this section if incompatible wastes are treated or stored in the tank system.]

IV.J.1. The Permittee shall not place incompatible wastes, or incompatible wastes and materials, in the same tank system or the same secondary containment system, unless the procedures specified in Permit Attachment IV-6 are followed. [40 CFR 264.199(a)]

[Note: The Permit Writer should ensure that Permit Attachment IV-6 clearly demonstrates how the Permittee will comply with the requirements of 40 CFR 264.17(b).]

IV.J.2. The Permittee shall not place hazardous waste in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless the requirements of Permit Condition VI.J.1. are met. [40 CFR 264.199(b)]

IV.K. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this section if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating Permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee before the Permit is issued are deferred for good cause until after permit issuance. Appropriate compliance schedules included in the Part B Permit Application should be attached to, or incorporated in, the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity and one identifying the milestone or completion dates. The following is an example of a condition that may apply for a tank system.]

The Permittee shall provide the following information to the Regional Administrator:

Item	Date Due to the Regional Administrator
[Example:	
1. ABC Engineering Design Report on the Above-ground Secondary Containment System for Tank System B (CF-102 and CF-103)	**June 26, 1989**
2. Documentation that a high-level alarm was installed on Tank System A (CF-101)	**October 1, 1989**
3. As-built construction drawings for the secondary containment system for Tank System B	**April 1, 1990]**

PERMIT ATTACHMENTS REFERENCED IN MODULE IV - TANKS

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-3	Facility Inspection Schedule
II-9	Facility Closure Plan
II-11	Facility Post-Closure Plan
IV-1	Plans and reports to support a variance from the requirements for secondary containment
IV-2	Detailed plans and other information describing secondary containment systems
IV-3	Procedures for conducting leak tests
IV-4	Procedures for preventing spills and overflows from the tanks or containment systems
IV-5	Procedures for handling ignitable or reactive waste
IV-6	Procedures for handling incompatible wastes

MODULE V - SURFACE IMPOUNDMENTS

[Note: Include this permit module when the Permittee is storing, treating, or disposing hazardous waste in surface impoundments. Waste analysis requirements (40 CFR 264.13), closure and post-closure requirements (40 CFR 264.228), and emergency repair/contingency plan requirements (40 CFR 264.227) for surface impoundments are contained as attachments to the Permit in the Waste Analysis Plan, Closure and Post-Closure Plan, and Contingency Plan, respectively. Permit conditions for Post-Closure (40 CFR 264.117) for surface impoundments are contained in the Post-Closure Care Permit Module (Module XIII). The Post-Closure Care Plan is incorporated in Module II which covers General Facility Conditions.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

V.A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information: general description (including dimensions and capacity); location; liner description (including type of material and thickness); description of leachate collection and removal system; description of dike (including type of material and height, any freeboard specifications); description of types of wastes stored, treated, or disposed; any unique or special features associated with the operation; and a reference to any special permit conditions.]

V.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

The Permittee may manage hazardous wastes under the following conditions:

V.B.1. The Permittee may **[specify store, treat, or dispose of]** the following hazardous wastes in surface impoundments, subject to the terms of this Permit:

Surface Impoundment Designation	Type of Unit	Capacity (gallons)	Dimensions of Impoundment	Description of Hazardous Waste	Hazardous Waste No.
[Example: South Lagoon	**Storage**	**15,000**	**33 ft(l) x 15 ft(w) x 4 ft(d)**	**Electroplating Sludge**	**F006]**

[Note: Under "Description of Hazardous Waste," the Permit Writer should provide only a brief generic description, not comprehensive characteristics, where a Hazardous Waste Number is provided for reference.]

V.B.2. The Permittee is prohibited from storing, treating, or disposing in surface impoundments any hazardous waste that is not identified in Permit Condition V.B.1.

[Note: The Permit Writer may also include here a list of specific wastes or materials that are prohibited]

V.C. DESIGN, CONSTRUCTION, AND OPERATING REQUIREMENTS

[Note: Permit Conditions V.C.1., V.C.4., and V.C.5. apply in each of the following cases: a surface impoundment that received waste beginning May 8, 1985, each new surface impoundment, each new surface impoundment unit at an existing facility, each replacement of an existing surface impoundment unit, and each lateral expansion of an existing surface impoundment. A surface impoundment that received waste prior to May 8, 1985, and is no longer active, shall be closed in accordance with the requirements of 40 CFR 264.228 and is not subject to any of these conditions.]

[Note: If a Permittee is granted an exemption from the double liner requirement [40 CFR 264.221(c)], in accordance with 40 CFR 264.221(d), then only Permit Conditions V.C.2., V.C.4., and V.C.5. apply to the surface impoundment. The Permit Writer should add a condition to the Permit stating that the Permittee is exempt from 40 CFR 264.221(c) and is subject to the requirements of 40 CFR 264.221(d).]

[Note: If a Permittee has a monofill and is granted an exemption from the double liner requirement [40 CFR 264.221(c)], in accordance with 40 CFR 264.221(e), then only Permit Conditions V.C.3., V.C.4., and V.C.5. apply to the surface impoundment. The Permit Writer should add a condition to the Permit stating that the Permittee is exempt from 40 CFR 221(c) and is subject to the requirements of 40 CFR 264.221(e).]

[Note: The Permit Writer should document the basis for granting exemptions in the Administrative Record for this facility.]

V.C.1. The Permittee shall install and maintain two [or more] liners, and a leachate collection and removal system between such liners, in accordance with the design plans and reports contained in Permit Attachment V-1. [40 CFR 264.221(c)] The Permittee shall manage the leachate collected from the leachate collection and removal system in accordance with the design plans and reports contained in Permit Attachment V-1. [The Permit Writer should specify in the Permit how collected leachate will be managed.]

[Note: Detailed design drawings of each liner and of the leachate collection and removal system and engineering reports, contained in Permit Attachment V-1, must demonstrate how the Permittee will meet all the requirements of 40 CFR 264.221(c).]

[Note: The Permit Writer should provide a brief description of the liners (e.g., construction materials, thickness, permeability) and leachate collection and removal system (e.g., construction materials, thickness and permeability of drainage layer). Example language is as follows: The primary liner shall consist of a 0.45-mil HDPE liner that is seam-welded and a composite secondary liner, located four feet below the primary liner, consisting of a 0.4-mil HDPE liner and three feet of compacted clay having a permeability not greater than 10^{-8} cm/sec. The leachate collection and removal system shall consist of a drainage tile system, embedded in a course sand media of 1×10^{-1} cm/sec or greater permeability, discharging to a sump with a level-controlled positive displacement pump, discharging to Tank 002 for subsequent testing and discharge to NPDES-regulated Outfall 002 or to the leachate treatment system.]

[Note: Use Permit Condition V.C.2. if the Regional Administrator finds that a surface impoundment with alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents into the ground water or surface water, at least as effectively as the requirements of 40 CFR 264.221(c).]

V.C.2. The Permittee shall [design, construct, operate, and] maintain the surface impoundment in accordance with the plans and reports contained in Permit Attachment V-1. [40 CFR 264.221(d)]

[Note: Permit Attachment V-1 should contain comprehensive detailed plans and engineering and hydrogeologic reports of the alternative design and operating practices.]

[Note: Use Permit Condition V.C.3. if the Regional Administrator waives the double liner requirements for a monofill, in accordance with the requirements of 40 CFR 264.221(e).]

V.C.3. The Permittee shall [design, construct, operate, and] maintain a monofill, in accordance with the plans and reports contained in Permit Attachment V-1. [40 CFR 264.221(e)]

[Note: Permit Attachment V-1 should contain detailed plans and engineering and hydrogeologic reports of the alternative design and operating requirements. The Permit Writer should specify in the Permit any additional operating practices and location characteristics that are necessary to ensure compliance with 40 CFR 264.221(e).]

V.C.4. The Permittee shall **[design, construct, operate, and]** maintain the surface impoundment to prevent overtopping, in accordance with the detailed design plans and operating practices contained in Permit Attachment V-2. [40 CFR 264.221(f)]

V.C.5. The Permittee shall **[design, construct, and]** maintain the surface impoundment dikes according to the detailed design plans and operating practices contained in Permit Attachment V-3. [40 CFR 264.221(g)]

V.D. LEAK CONTROL PROCEDURES

V.D.1. The Permittee shall monitor separately, each leak detection system at each surface impoundment, for the presence of liquids daily, during the active life of the facility. The Permittee shall completely remove all liquid from each leak detection system as expeditiously as possible. The Permittee shall manage this liquid according to the plans and procedures described in Permit Attachment V-4. The Permittee shall mitigate leakage into the leak detection system.

V.D.2. In the event of a sudden drop in the liquid level of the surface impoundment, that is not known to be caused by changes in the flow into or out of the impoundment, or if the dike leaks, the Permittee shall remove the surface impoundment from service immediately and complete the following actions: [40 CFR 264.227(a)-(b)]

- Immediately shut off the flow or stop the addition of wastes into the impoundment;
- Immediately contain any surface leakage which has occurred or is occurring;
- Immediately stop the leak;
- Take any necessary steps to stop or prevent catastrophic failure; and
- If a leak cannot be stopped by any other means, empty the impoundment.

V.D.3. A surface impoundment that has been removed from service pursuant to this permit condition may be returned to service only if the portion of the impoundment which was failing is repaired and the following steps are taken: [40 CFR 264.227(d)]

V.D.3.a. If the impoundment was removed from service as the result of actual or imminent dike failure, the dike's structural integrity must be recertified by a qualified, registered professional engineer, in accordance with 40 CFR 264.226(c).

V.D.3.b. If the impoundment was removed from service as the result of a sudden drop in the liquid level, then for any existing portion of the impoundment, a liner must be installed in compliance with 40 CFR 264.221(a), and for any other portion of the impoundment, the repaired liner system must be certified by a qualified, registered professional engineer as meeting the design specifications contained in Permit Condition V.C.

V.D.4. A surface impoundment that has been removed from service, in accordance with the requirements of 40 CFR 264.227, and is not being repaired, must be closed in accordance with the provisions of 40 CFR 264.228. [40 CFR 264.227(e)]

V.E. INSPECTION SCHEDULES AND PROCEDURES

V.E.1. The Permittee shall inspect the surface impoundment in accordance with the inspection schedule, Permit Attachment II-3, and shall complete the following as part of these inspections:

[Note: Include Permit Conditions V.E.2. through V.E.4. for new or expanded impoundments; otherwise, only Permit Condition V.E.4. is necessary.]

V.E.2. The Permittee shall inspect the liners and cover systems during construction and installation for uniformity, drainage, and imperfections. [40 CFR 264.226(a)]

V.E.3. The Permittee shall inspect the surface impoundment immediately after construction or installation. [40 CFR 264.226(a)]

V.E.3.a. Synthetic liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters.

V.E.3.b. Soil-based and admixed liners and covers must be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

V.E.4. If the surface impoundment is removed from service for more than six (6) months, then prior to returning to service, the Permittee shall obtain a certification from a qualified, registered professional engineer that the surface impoundment's dike, including that portion of any dike which provides freeboard, has structural integrity. The certification must establish that the dike: [40 CFR 264.226(c)]

V.E.4.a. Will withstand the stress of the pressure exerted by the types and amounts of wastes to be placed in the surface impoundment.

V.E.4.b. Will not fail due to scouring or piping, without dependence on any liner system included in the surface impoundment construction.

[Note: The Permit Writer may specify additional items to be covered by the certification. These could include permeability measurements or requiring the testing of all the synthetic liner seam welds.]

V.F. RECORDKEEPING AND REPORTING

The Permittee shall notify the Regional Administrator, in writing, within seven (7) days from detecting either a leak in the surface impoundment dike or a sudden drop in the liquid level (and the drop is not caused by changes in the flows into or out of the impoundment). [40 CFR 264.227(b)(6)]

V.G. CLOSURE AND POST-CLOSURE CARE

[Note: Closure plan and post-closure plan requirements for surface impoundments are:

- **Double-lined storage and treatment impoundments -- closure plan required but no contingent post-closure plan;**
- **Storage and treatment impoundments that are not double lined -- closure plan and contingent post-closure plan required; and**
- **Disposal impoundments -- closure and post-closure plans required.**

Permit Condition V.G.1. applies to all surface impoundments. The Permit Writer should include Permit Condition V.G.2. for storage or treatment

impoundments that are not equipped with double liners, as a contingency, in case the surface impoundment cannot be "clean" closed at the time of closure. The Permit Writer should include Permit Condition V.G.3. for disposal surface impoundments.]

V.G.1. At closure of the surface impoundment, the Permittee shall follow the procedures in the approved Closure Plan contained in Permit Attachment II-9. [40 CFR 264.228(a)]

V.G.2. If, after closure, waste residues or contaminated materials are left in place or all contaminated subsoils cannot be removed during closure to the levels specified in the closure plan, then the Permittee shall follow the procedures in the approved contingency portion of the Closure Plan and the contingent Post-Closure Plan contained in Permit Attachments II-9 and II-11 and the Post-Closure Care Permit Module (Module XIII). [40 CFR 264.228(b) and (c)]

V.G.3. For disposal surface impoundments (where hazardous waste, waste residues, or contaminated materials are left in place at final closure), the Permittee shall follow the plans and procedures in the approved Post-Closure Care Plan in Permit Attachment II-11 and in the Post-Closure Permit Module (Module XIII). [40 CFR 264.228(b)]

V.H. SURFACE IMPOUNDMENT RETROFITTING PLANS OR WAIVER APPLICATION REQUIREMENTS

[Note: Any valid multiple liner waiver request application under section 3005(j)(5) of HSWA must have been sent to EPA no later than November 8, 1986. If no waiver was requested by November 8, 1986, or if a waiver request was denied by the Regional Administrator, the Permittee must proceed to retrofit the surface impoundment in accordance with Permit Condition V.H.1.]

V.H.1. Surface Impoundment Retrofitting Plans

V.H.1.a. Draft Construction Plan

The Permittee, within 60 days **[or some reasonable time frame determined by the Permit Writer]** of the effective date of the Permit **[or denial of the waiver request or change in conditions]**, must submit a Draft Construction Plan for the retrofitting of surface impoundments **[The Permit Writer should identify the specific surface impoundments covered by this condition.]** to the Regional Administrator for review. This plan must comply with the Minimum Technology Requirements of 40 CFR 264.221.

V.H.1.b. Final Construction Plan

Following receipt of the Draft Construction Plan, the Regional Administrator will provide comments to the Permittee as to any corrections or modifications which must be made to the Draft Construction Plan. Within 30 days **[or some reasonable time frame determined by the Permit Writer]** of receipt of such comments, the Permittee must submit a Final Construction Plan to the Regional Administrator.

V.H.1.c. Initiation of Construction

Within 30 days **[or some reasonable time frame determined by the Permit Writer]** of the Regional Administrator's approval of the Final Construction Plan, the Permittee shall initiate the approved Final Construction Plan, pursuant to the terms and schedule set forth in the plan.

V.H.1.d. Construction Completion

The surface impoundments **[The Permit Writer should identify the specific surface impoundments covered by this condition.]** must be completely retrofitted to comply with the Minimum Technology Requirements of 40 CFR 264.221, in accordance with the approved Final Construction Plan, no later than November 8, 1988.

V.H.1.e. Construction Quality Assurance Documentation Report

The Permittee shall submit a final Construction Quality Assurance Documentation Report, including as-built drawings, to the Regional Administrator within 60 days **[or some reasonable time frame determined by the Permit Writer]** of completion of any retrofitted surface impoundments.

V.H.2. Waiver Application Plans

[Note: Section 3005(j) of RCRA provides for four categories of exemptions to the Minimum Technological Requirements for surface impoundments. The following is a listing of the criteria for each category. The Permit Writer shall include Permit Condition V.H.2. to obtain information from the Permittee regarding the schedule and/or status of information to substantiate the exemption.

Exemption No. 1: An interim status surface impoundment must:

- Have at least one liner for which there is no evidence that such liner is leaking;
- Be located more than one-quarter mile from an underground source of drinking water; and
- Be in compliance with generally applicable ground-water monitoring requirements for facilities with Permits under subsection (c) of Section 3005.

Exemption No. 2: A surface impoundment must be one which:

- Contains treated waste water during the secondary or subsequent phases of an aggressive biological treatment facility subject to a permit issued under section 402 of the Clean Water Act (or which holds such treated waste water after treatment and prior to discharge);
- Is in compliance with generally applicable ground-water monitoring requirements for facilities with RCRA Permits; and
- Is part of a facility in compliance with Section 301(b)(2) of the Clean Water Act; or in the case of a facility, for which no effluent guidelines required under Section 304(b)(2) of the Clean Water Act are in effect and no Permit under section 402(a)(1) of such Act implementing Section 301(b)(2) of such Act has been issued, is part of a facility in compliance with a Permit under Section 402 of such Act, which is achieving significant degradation of toxic pollutants and hazardous constituents contained in the untreated waste stream and which has identified those toxic pollutants and hazardous constituents in the untreated waste stream to the appropriate permitting authority.

Exemption No. 3: The Agency, after notice and opportunity for comment, may modify the requirements for any surface impoundment if the Permittee demonstrates that such surface impoundment is located, designed and operated so as to assure there will be no migration of any hazardous constituent into ground water or surface water at any future time. The Regional Administrator shall take into account locational criteria established under Section 3004(o)(7).

Exemption No. 4: The Agency may modify the surface impoundment retrofitting requirements in the case of a surface impoundment for which the Permittee, prior to October 1, 1984, has entered into, and is in compliance with, a consent order, decree, or agreement with the Agency with an authorized program, mandating corrective action

with respect to such surface impoundment, that provides a degree of protection of human health and the environment which is, at a minimum, equivalent to the Minimum Technological Requirements.]

V.H.2. The Permittee shall submit information that substantiates the exemption to the Minimum Technological Requirements, in accordance with the schedules in Permit Attachment V-5.

V.H.3. Permit Modification Request

The Permittee shall not receive, store, treat, or dispose of hazardous waste after November 8, 1988, and must commence closure of surface impoundments **[The Permit Writer should identify the specific surface impoundments covered by this condition.]** by December 8, 1988. [53 FR 24719, June 30, 1988] The Permittee shall submit a request for modification of the closure plan to reflect closure of this (these) unit(s) within 60 days from the effective date of this Permit or date of waiver denial or change in conditions.

V.I. SPECIAL SURFACE IMPOUNDMENT PROVISIONS FOR IGNITABLE OR REACTIVE WASTES

[Note: The Permit Writer should include this condition if the Permittee places ignitable or reactive wastes in the surface impoundment.]

The Permittee shall not place ignitable or reactive waste in surface impoundments **[The Permit Writer should identify the specific surface impoundments covered by this condition.]**, unless the procedures specified in Permit Attachment V-6 are followed. [40 CFR 264.229(b)]

[Note: The Permit Writer should specify in brief terms how the Permittee shall comply with 40 CFR 264.229. In accordance with the regulations, ignitable or reactive wastes can be placed in a surface impoundment if: (a) the waste is treated or mixed before or immediately after placement in the surface impoundment so that the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste and 40 CFR 264.17 (General Requirements for Ignitable, Reactive, or Incompatible Wastes) is complied with, or (b) the waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react, or (c) the surface impoundment is used solely for emergencies. The Permit Writer should indicate which one of these three conditions applies to the Permit.]

V.J. SPECIAL SURFACE IMPOUNDMENT PROVISIONS FOR INCOMPATIBLE WASTES

[Note: The Permit Writer should include this condition if the Permittee places incompatible wastes in the surface impoundment.]

The Permittee shall not place incompatible wastes, or incompatible wastes and materials, in the same surface impoundment, unless the procedures specified in Permit Attachment V-7 are followed. [40 CFR 264.230]

[Note: The Permit Writer should specify how the Permittee shall comply with 40 CFR 264.17(b) and (c).

V.K. SPECIAL SURFACE IMPOUNDMENT PROVISIONS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, AND F027 [HSWA]

[Note: The Permit Writer should include this condition if the Permittee stores, treats, or disposes special "F" wastes in the surface impoundment.]

The Permittee may place hazardous wastes **[specify which of the following]** F020, F021, F022, F023, F026, or F027 in the surface impoundment **[The Permit Writer should identify the specific surface impoundments covered by this condition.]**, in accordance with the waste management plan contained in Permit Attachment V-8. [40 CFR 264.231]

[Note: The Regional Administrator must approve the waste management plan developed under 40 CFR 264.231.]

V.L. SPECIAL SURFACE IMPOUNDMENT PROVISIONS FOR HAZARDOUS WASTES RESTRICTED FROM SURFACE IMPOUNDMENT UNITS [HSWA]

[Note: The Permittee may continue to place restricted hazardous waste, as defined in 40 CFR Part 268, in a surface impoundment beyond the prohibition date if the Permittee has been granted an extension to the date [40 CFR 268.1(c)(1)] or the Permittee has been granted an exemption from the prohibition [40 CFR 268.1(c)(2)], or the waste is contaminated soil or debris resulting from a response action taken under CERCLA Sections 104 or 106 or a corrective action taken under RCRA [40 CFR 268.1(c)(3)]. (These wastes may be disposed only until November 8, 1988.) The Permit Writer should include this condition in the Permit if one or more of these situations occur. The Permit Writer should document the basis for granting all exceptions to the land disposal restrictions in the Administrative Record for this Permit.]

V.L.1. **The Permittee may place the following restricted hazardous waste(s) in a surface impoundment, subject to the terms of this Permit and as described below:**

Surface Impoundment Designation	Hazardous Waste No.	Description of Hazardous Waste	Type of Approval	Expiration Date[1]
[Example: South Lagoon	F001	Tetrachloroethylene	Exemption	August 13, 1998]

[Note: The Permit Writer should include Permit Conditions V.L.2. - V.L.4. in situations where case-by-case extensions to the prohibition date have been granted under 40 CFR 268.5.]

V.L.2. All restricted waste placed in the surface impoundment must be generated at the facility covered by this RCRA Permit unless the restricted waste is from another generating facility that is covered by an EPA or State approved application for a restricted waste capacity extension that specifically allows placement into the Permittee's surface impoundment. [40 CFR 268.5(d)]

V.L.3. The Permittee shall immediately notify the Regional Administrator as soon as he has knowledge of any change in the conditions certified in his approved application for the case-by-case capacity extension, dated _______. [40 CFR 268.5(f)]

V.L.4. The Permittee shall submit written progress reports regarding the approved case-by-case capacity extension that: (a) describe the overall progress made toward constructing or otherwise providing alternative treatment, recovery or disposal capacity; (b) identify any event which may cause or has caused a delay in the development of the capacity; and (c) summarize the steps taken to mitigate the delay. The progress reports must be submitted in accordance with the schedule in Permit Attachment V-9. [40 CFR 268.5(g)]

[Note: Permit Conditions V.L.5. and V.L.6. only apply to a new landfill or surface impoundment unit, replacement of an existing surface impoundment unit, and each lateral expansion of an existing surface impoundment unit.]

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[1] Extensions may be granted for up to one year from the prohibition date, plus one additional year with proper demonstration. [40 CFR 268.5(e)]
Exemptions shall be no longer than the term of the RCRA Permit for the unit. [40 CFR 268.6(h)]

V.L.5. The Permittee shall comply with all applicable requirements of 40 CFR Subpart F to protect ground water and all applicable requirements of 40 CFR 264.301(c), (d) and (e).

V.L.6. The Permittee shall comply with all applicable requirements of 40 CFR Subpart F to protect ground water and all applicable requirements of 40 CFR 264.221(c), (d), and (e).

[Note: Permit Condition V.L.7 applies only to surface impoundments that treat restricted waste, to the performance standards specified in 40 CFR 268 Subpart D, and ship the treated waste or treatment residue to another land disposal facility.]

V.L.7. The Permittee shall submit a certification to the receiving facility for each shipment of waste, or treatment residue of a restricted waste, that is shipped to a land disposal facility. The certification shall indicate that the waste or treatment residue has been treated to the performance standards specified in 40 CFR 268 Subpart D. The Permittee shall use the certification language in 40 CFR 268.7(b)(2)(i). [40 CFR 268.7(b)(2)]

V.L.8. The Permittee shall maintain records of notices and certifications received from generators and waste treatment facilities that restricted waste is accepted from, and obtain copies of waste analysis data to determine that the wastes are in compliance with the applicable treatment standards in 40 CFR 268.41. [40 CFR 268.7(c)]

V.M. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this condition if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating Permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee before the Permit is issued are deferred for good cause until after Permit issuance. Appropriate compliance schedules included in the Part B Permit Application should be attached to, or incorporated in, the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity and one identifying the milestone or completion dates. The following is an example of a condition that may apply for a surface impoundment.]

The Permittee shall provide the following information to the Regional Administrator:

Item	Date Due to the Regional Administrator
[Example:	
1. Revised Closure Plan	May 10, 1989
2. Plans and Procedures for Leachate Management	June 15, 1989]

PERMIT ATTACHMENTS REFERENCED IN MODULE V - SURFACE IMPOUNDMENTS

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-3	Facility Inspection Schedule
II-9	Closure Plan
II-11	Post-Closure Care Plan
V-1	Design Plans and Reports for Installing Liners and Leachate Collection and Removal System and Operating the LCRS (or for an alternative design) (or for a monofill where the Agency has waived the double liner requirement)
V-2	Design Plans and Operating Practices to Prevent Overtopping
V-3	Design Plans and Operating Practices to Prevent Massive Failure of the Dikes
V-4	Plans and Procedures for Leachate Management
V-5	Schedules for Submitting Required Exemption Information
V-6	Procedures for Managing Ignitable or Reactive Wastes
V-7	Procedures for Managing Incompatible Wastes
V-8	Waste Management Plan for Special "F" Wastes
V-9	Schedule for Submitting Progress Reports on Developing Alternatives for Handling Land-Banned Wastes

MODULE VI - WASTE PILES

[Note: This permit module should be included when the Permittee is storing and/or treating hazardous waste in waste piles (waste piles that are closed with wastes in place are regulated as landfills.) When using this module in a permit, the Permit Writer should specify in the title whether this module is for storage and/or treatment of waste in waste piles. Waste analysis requirements (40 CFR 264.13) and closure requirements (40 CFR 264.197) for waste piles are normally contained as attachments to the Permit in the Waste Analysis Plan and the Closure Plan. Post-closure requirements for waste piles, when necessary (40 CFR 264.117), are contained in the post-closure permit module (Module XIII).]

[Note: In general, a single permit module should be used if multiple waste piles will be covered by the same Permit for a given facility. However, it is acceptable to include multiple waste pile modules if, in the Permit Writer's judgment, the characteristics and permit conditions for each waste pile are sufficiently different to warrant multiple modules.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

VI.A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information: description, capacity and location of each waste pile; description of the types of waste handled; any unique or special features associated with the activity; and a reference to any special permit conditions.]

VI.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

VI.B.1. The Permittee may __________ [specify store and/or treat] the following hazardous wastes in waste piles, subject to the terms of this permit and as described below:

Waste Pile Designation	Area Dimensions [or overall surface area]	Capacity (cubic yards)	Description of Hazardous Waste	Hazardous Waste No.
[Example: Incinerator Ash Pile	20 ft. high x 20 ft. base diameter	100 yd^3	Ash from Still Bottoms Incinerator	K009]

[Note: Under "Description of Hazardous Waste," the Permit Writer should provide only a brief generic description, not comprehensive characteristics, where a Hazardous Waste Number is provided for reference.]

VI.B.2. The Permittee is prohibited from storing or treating hazardous waste that is not identified in Permit Condition VI.B.1.

[Note: The Permit Writer may also include here a list of specific wastes or materials that are prohibited.]

VI.C. DESIGN, CONSTRUCTION, AND OPERATING REQUIREMENTS

[Note: Permit Conditions VI.C.1. through VI.C.6. do not apply to a waste pile that is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated and (1) liquids or materials containing free liquids are not placed in the pile; (2) the pile is protected from surface water run-on; (3) where necessary, wind dispersal of the waste is controlled by means other than wetting; and (4) the pile will not generate leachate.] [40 CFR 264.250(c)]

[Note: Permit Conditions VI.C.1. and VI.C.2. apply only to new units and lateral expansions and replacements of existing units at interim status waste piles. If the Permittee has successfully demonstrated, in accordance with 40 CFR 264.251(b), that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents into the ground water or surface water at any future time and, consequently, is granted an exemption from 40 CFR 264.251(a), the decision should be documented in the Administrative Record for the facility. Where an exemption is granted, the Permit Writer should specify in the Permit all design and operating practices necessary to ensure that the requirements of 40 CFR 264.251(b) are satisfied. Permit Conditions VI.C.3. through VI.C.6. apply to all waste piles.]

VI.C.1. The Permittee shall design, construct, and install a liner that will prevent any migration of wastes out of the waste pile, in accordance with the design plans and specifications contained in Permit Attachment VI-1. [40 CFR 264.251(a)(1)]

[Note: Detailed design drawings of each liner and the leachate collection and removal system and engineering reports, contained in Permit Attachment VI-1, must demonstrate how the Permittee will meet all of the requirements of 40 CFR 264.301(c).]

[Note: The Permit Writer should provide a brief description (in Permit Conditions VI.C.1. and VI.C.2.) of the liners (e.g., construction materials, thickness, permeability) and leachate collection and removal system (e.g., construction materials, thickness and permeability of drainage layer). Example language is as follows: The primary liner shall consist of a 0.45-mil HDPE liner that is seam-welded and a secondary liner, located four feet below the primary liner, consisting of a 0.4-mil HDPE liner and three feet of compacted clay having a permeability not greater that 10^{-8} cm/sec. The leachate collection and removal system shall consist of a drainage tile system, embedded in a course sand media of $1x10^{-1}$ cm/sec or greater permeability, discharging to a sump with a level-controlled positive displacement pump, discharging to Tank 002 for subsequent testing and discharge to NPDES-regulated Outfall 002 or to the leachate treatment system.]

VI.C.2. The Permittee shall design, construct, maintain, and operate a leachate collection and removal system immediately above the liner that will collect and remove leachate from the waste pile, in accordance with the design plans, specifications, and operating practices contained in Permit Attachment VI-2. [40 CFR 264.251(a)(2)]

[Note: The Permit Writer should specify additional design and operating conditions, as necessary, as part of this permit condition to ensure that the leachate depth over the liner does not exceed one foot.] [40 CFR 264.251(a)(2)]

VI.C.3. The Permittee shall **[design, construct,]** operate, and maintain a run-on control system in accordance with the design plans, specifications, and operating practices contained in Permit Attachment VI-3. This control system must be capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm. [40 CFR 264.251(c)]

VI.C.4. The Permittee shall **[design, construct,]** operate, and maintain a run-off management system in accordance with the design plans, specifications, and operating practices contained in Permit Attachment VI-4. This management system must be capable of collecting and controlling at least the water volume resulting from a 24-hour, 25-year storm. [40 CFR 264.251(d)]

[Note: The Permit Writer should specify additional conditions, as necessary, to ensure the proper management

of run-off. The following conditions are for example purposes only:

a. The Permittee shall measure the volumetric flow rate of any run-off from the waste pile.

b. The Permittee shall sample run-off once each day and analyze each sample for pH, conductivity, total organic carbon, and chromium concentration.

c. The Permittee shall record and maintain all data compiled in accordance with Permit Condition VI.C.4.

d. The Permittee shall obtain an NPDES permit for run-off discharged to a surface water body.

e. The Permittee shall manage the residue generated from the run-off management system as a hazardous waste.]

VI.C.5. The Permittee shall empty or otherwise manage run-on and run-off collection and holding facilities associated with the run-on and run-off control system(s) to maintain the design capacity of the system(s) in accordance with the design plans, specifications, and operating practices contained in Permit Attachment VI-5. [40 CFR 264.251(e)]

[Note: The Permit Writer should include Permit Condition VI.C.6. if the waste pile contains particulate matter that is potentially subject to wind dispersal.]

VI.C.6. The Permittee shall cover or otherwise manage the waste pile to control wind dispersal of particulate matter in accordance with the methods contained in Permit Attachment VI-6. [40 CFR 264.251(f)]

VI.D. INSPECTION SCHEDULES AND PROCEDURES

The Permittee shall inspect the waste pile in accordance with the Inspection Schedule, Permit Attachment II-3, and shall complete the following as part of those inspections.

[Note: The Permit Writer should include Permit Condition VI.D.1., tailored to each facility, where liners or cover systems (e.g., membranes, sheets, or coatings) will be constructed or installed at the waste pile.]

VI.D.1. The Permittee shall inspect liners and cover systems during construction or installation for uniformity, damage, and imperfections [e.g., holes, cracks, thin spots, or foreign materials]. The Permittee shall inspect liners and cover systems immediately after construction and installation as follows: [40 CFR 264.254(a)]

a. Synthetic liners and covers [if applicable] to ensure tight seams and joints, and the absence of tears, punctures, or blisters; and/or

b. Soil-based and admixed liners [if applicable] for imperfections including lenses, cracks, channels, root holes, and other structural nonuniformities that may cause an increase in the permeability of the liner or cover.

VI.D.2. The Permittee shall inspect the waste pile on a weekly basis and immediately after storms to detect evidence of the following: [40 CFR 264.254(b)]

a. Deterioration, malfunctions, or improper operation of the run-on and run-off control system;

b. Proper functio[illegible]f the wind dispersal control system [if appl[illegible]]; and

c. Presence of leachate in, and proper functioning of, leachate collection and removal systems [if applicable].

VI.E. RECORDKEEPING

The Permittee shall record and maintain in the operating record for this Permit all monitoring and inspection data compiled under the requirements of this permit module. [40 CFR 264.73]

VI.F. CLOSURE AND POST-CLOSURE CARE

[Note: Permit Condition VI.F.1. applies to all waste piles. The Permit Writer should include Permit Condition VI.F.2. for all waste piles that do not comply with the liner requirements of 40 CFR 264.251(a)(1) and are not exempt from them in accordance with 40 CFR 264.250(c) or 264.251(b). Permit Condition VI.F.2. is a contingency in case the waste pile cannot be "clean" closed at the time of closure.]

VI.F.1. At closure of the waste pile, the Permittee shall follow the procedures in the Closure Plan, Permit Attachment II-9. [40 CFR 264.258(a)]

[Note: Since all waste piles are required to seek clean closure, the Closure Plan must address clean closure, but may also need a contingent closure plan referenced in Permit Condition VI.F.2.]

VI.F.2 If after closure, the Permittee finds that not all contaminated soils can be practically removed or decontaminated in accordance with the Closure Plan, then the Permittee shall close the waste pile and perform post-closure care following the procedures in the contingency portion of the Closure Plan and the contingent Post-Closure Plan, Permit Attachments II-9 and II-11 and in the Post-Closure Permit Module (Module XIII). [40 CFR 264.258(b) and (c)]

[Note: A contingency portion in the Closure Plan and a contingent Post-Closure Plan are required at the time a permit is issued for waste piles that do not comply with the liner requirements and are not exempt from them.]

VI.G. GROUND WATER, SURFACE WATER, AND SUBSURFACE SOIL MONITORING EXEMPTIONS

[Note: The Permit Writer should include Permit Condition VI.G.1. if the waste pile is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated.]

VI.G.1. The Permittee is not subject to the design and operating requirements for waste piles listed in 40 CFR 264.251 or the ground water protection standards listed in 40 CFR Subpart F, provided that the following conditions are met: [40 CFR 264.250(c)]

a. The Permittee shall design, construct, and operate the waste pile in accordance with the design plans, specifications, and operating practices contained in Permit Attachment VI-7;

b. The Permittee shall not place liquids or materials containing free liquids in the waste pile;

c. The Permittee shall protect the waste pile from surface water run-on by the structure or in some other manner;

d. The Permittee shall control dispersal of the waste by wind, by means other than wetting; and

e. The Permittee shall ensure the pile will not generate leachate through decomposition or other reactions.

[Note: The Permit Writer should include Permit Condition VI.G.2. if the Permittee qualifies under 40 CFR 264.251(b) for exemption to the

minimum technological requirements for a liner, and leachate collection and removal system required under 40 CFR 264.251(a).]

VI.G.2. The Permittee shall [construct and] operate the waste pile as specified in Permit Attachment VI-8 so as to prevent the migration of any hazardous constituents into the ground water or surface water, at least as effectively as the liner and leachate collection systems would, as described in 40 CFR 264.251(a). [40 CFR 264.251(b)].

VI.H. SPECIAL WASTE PILE PROVISIONS FOR IGNITABLE OR REACTIVE WASTE

[Note: The Permit Writer should include this condition if the Permittee places ignitable or reactive wastes in the waste pile.]

The Permittee shall not place ignitable or reactive waste in the waste pile unless the procedures specified in Permit Attachment VI-9 are followed.

[Note: The Permit Writer should ensure that Permit Attachment VI-9 clearly documents how the Permittee will comply with the requirements of 40 CFR 264.198(a). Per 40 CFR 264.198(a), the Permittee shall not place ignitable or reactive waste in a waste pile, unless the waste is treated, rendered, or mixed before or immediately after placement in the waste pile system so that: (a) the resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste in 40 CFR 261.21 or 261.23 and the precautions in 40 CFR 264.17(b) (the General Requirements for Ignitable and Reactive Wastes) are complied with or (b) the waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.]

VI.I. SPECIAL WASTE PILE PROVISIONS FOR INCOMPATIBLE WASTES

[Note: The Permit Writer should include this condition if the Permittee places incompatible wastes in waste piles.]

VI.I.1. The Permittee shall not place incompatible wastes, or incompatible wastes and materials in the same waste pile, unless the procedures described in Permit Attachment VI-10 are followed. [40 CFR 264.257(a)].

[Note: The Permit Writer should ensure that Permit Attachment VI-10 clearly demonstrates how the Permittee will comply with the requirements of 40 CFR 264.17(b)]

VI.I.2. The Permittee shall separate a pile of hazardous waste from any incompatible hazardous waste or other materials stored nearby in containers, other waste piles, open tanks, or surface impoundments, or protect the pile from the waste or materials by a dike, berm, wall, or other device. [40 CFR 264.257(b)]

VI.I.3. The Permittee shall not place hazardous wastes on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to ensure compliance with 40 CFR 264.17(b).

VI.J. SPECIAL WASTE PILE PROVISIONS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, AND F027 [HSWA]

[Note: The Permit Writer should include this condition if the Permittee stores or treats, any of the "F" wastes on the waste pile.]

The Permittee may place hazardous wastes **[specify which of the following]** F020, F021, F022, F023, F026, or F027 in the waste pile in accordance with the waste management plan contained in Permit Attachment VI-11.

[Note: The Regional Administration must approve the waste management plan developed under 40 CFR 264.259. In evaluating a proposed waste management plan, the following factors must be considered:

1. **Volume of the wastes;**
2. **Chemical and physical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;**
3. **Attenuative properties of underlying and surrounding soils or other materials;**
4. **Mobilizing properties of other materials co-disposed with these wastes; and**
5. **Effectiveness of additional treatment, design, or monitoring techniques.**

In evaluating the proposed plan, the Regional Administrator may determine that additional design, operating, and monitoring requirements are necessary in order to reduce the possibility of migration of these wastes to ground water, surface water, or air to protect human health and the environment.]

VI.K SPECIAL WASTE PILE PROVISIONS FOR HAZARDOUS WASTES RESTRICTED FROM WASTE PILE UNITS [HSWA]

[Note: The Permittee may continue to place restricted hazardous waste, as defined in 40 CFR Part 268, in a waste pile beyond the prohibition date if the Permittee has been granted an extension to the date [40 CFR 268.1(c)(1)] or the Permittee has been granted an exemption from the prohibition [40 CFR 268.1(c)(2)], or the waste is contaminated soil or

debris resulting from a response action taken under CERCLA Sections 104 or 106 or a corrective action taken under RCRA [40 CFR 268.1(c)(3)]. (These wastes may be disposed only until November 8, 1988). The Permit Writer should include this section in the Permit if one or more of these situations occur. The Permit Writer should document the basis for granting all exceptions to the land disposal restrictions in the Administrative Record for this Permit.]

VI.K.1. The Permittee may place the following restricted hazardous waste(s) in the waste pile subject to the terms of this permit and as described below:

Waste Pile Designation	Hazardous Waste No.	Description of Hazardous Waste	Type of Approval	Expiration Date[1]
[Example:				
Degreasing Area	F001	Tetrachloro-ethylene	Exemption	August 31, 1998]

[Note: The Permit Writer should include Permit Conditions VI.K.2 - VI.K.4. in situations where case-by-case extensions to the prohibition date have been granted under 40 CFR 268.5.]

VI.K.2. All restricted waste placed in the waste pile must be generated at the facility covered by this RCRA permit, unless the restricted waste is from another generating facility that is covered by an EPA- or State-approved application for a restricted waste capacity extension that specifically allows placement into the Permittee's waste pile. [40 CFR 268.5(d)]

VI.K.3. The Permittee shall immediately notify the Regional Administrator as soon as he has knowledge of any change in the conditions certified in his approved application for the case-by-case capacity extension, dated _______. [40 CFR 268.5(f)]

VI.K.4. The Permittee shall submit written progress reports regarding the approved case-by-case capacity extension that: (a) describe the overall progress made toward constructing or otherwise providing alternative treatment, recovery or disposal capacity; (b) identify any event which may cause, or has caused, a delay in the development of the capacity; and (c) summarize the steps taken to mitigate the delay. The progress reports must be submitted in accordance with the schedule in Permit Attachment VI-12. [40 CFR 268.5(g)]

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[1] Extensions may be granted for up to one year from the prohibition date, plus one additional year with proper demonstration. [40 CFR 268.5(e)]
Exemptions shall be no longer than the term of the RCRA permit for the unit. [40 CFR 268.6(h)]

[Note: Permit Conditions VI.K.5. and VI.K.6. only apply to new waste piles, replacements of an existing waste pile, and each lateral expansion of an existing waste pile.]

VI.K.5. The Permittee shall comply with all applicable requirements of 40 CFR Subpart F to protect ground water and all applicable requirements of 40 CFR 264.301(c), (d), and (e).

VI.K.6. The Permittee shall comply with all applicable requirements of 40 CFR Subpart F to protect ground water and all applicable requirements of 40 CFR 264.221(c), (d), and (e).

VI.K.7. The Permittee shall maintain records of notices and certifications received from generators and waste treatment facilities that restricted waste is accepted from, and obtain copies of waste analysis data to determine that the wastes are in compliance with the applicable treatment standards in 40 CFR 268.41. [40 CFR 268.7(c)]

VI.L. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this section if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee before the permit is issued are deferred for good cause until after permit issuance. Appropriated compliance schedules included in the Part B Permit Application should be attached to, or incorporated in, the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity, and one identifying the milestone or completion dates. The following is an example of a condition that may apply for a waste pile.]

The Permittee shall provide the following information to the Regional Administrator:

Item	Date Due to the Regional Administrator
[Example: 1. Operation and Maintenance Procedures for the Run-Off Management System	**December 31, 1988]**

PERMIT ATTACHMENTS REFERENCED IN MODULE VI - WASTE PILES

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-3	Facility Inspection Schedule
II-9	Facility Closure Plan
II-11	Facility Post-Closure Plan
VI-1	Design Plans and Specifications for Installing a Liner
VI-2	Design Plans and Specifications, and Operating Practices for Installing and Operating a Leachate Collection System
VI-3	Design Plans and Specifications, and Operating Practices for Installing and Operating a Run-On Control System
VI-4	Design Plans and Specifications, and Operating Practices for Installing and Operating a Run-Off Management System
VI-5	Design Plans and Specifications, and Operating Practices for Managing Run-On and Run-Off
VI-6	Procedures for Controlling Wind Dispersal
VI-7	Design Plans, Specifications and Operating Practices for a Waste Pile Inside or Under a Structure
VI-8	Design Plans, Specifications and Operating Practices for Exemptions to 40 CFR 264.251(a).
VI-9	Ignitable and Reactive Waste Management Plan
VI-10	Incompatible Waste Management Plan

September 1988

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
VI-11	Special "F" Waste Management Plan
VI-12	Schedule for Submitting Progress Reports on Developing Alternatives for Handling "Banned" Waste(s)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP -8 1988

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Model Permit and Permit Quality Protocol

FROM: Bruce R. Weddle, Director
Permits and State Programs Division

TO: Addressees

Attached for your review and use are two draft revised guidances: Model RCRA Permit for Hazardous Waste Management Facilities and RCRA Permit Quality Protocol. These documents have been updated to include more recent rules, policies, and guidances. The Model Permit will replace models that were sent out years ago (pre-HSWA). The Protocol will replace the RCRA Permit Quality Protocol, August 1986. Comments on the incineration sections are requested by October 28, 1988. Comments on the other sections are requested by December 16, 1988.

The primary purpose of the Model Permit and Protocol is to assist Permit Writers in drafting or reviewing hazardous waste facility permits. They cover process-specific conditions for container storage areas, tanks, incinerators, waste piles, surface impoundments, land treatment areas, and landfills, as well as ground-water monitoring, corrective action, closure and post-closure, and other general permit and facility conditions. The introduction to the Model Permit discusses an approach (with examples) to developing permits. The Protocol is to be used in conjunction with the Model Permit to evaluate the technical completeness and adequacy of permits. The Protocol provides a checklist of permit conditions, which mirrors the Model Permit conditions, for use in evaluating the completeness of the permit, and for a select number of permit conditions, the Protocol provides technical and enforceability evaluation criteria and guidance. In addition, the Protocol is to be used to help evaluate the completeness and adequacy of the Administrative Record in supporting the permit conditions. The Protocol is used by Headquarters when conducting Regional reviews, and Regions should use it when evaluating the States.

These draft revised guidances reflect the Federal rules as of July 1, 1987, including the latest tank rules, as well as some more recent rules, policies, and guidances such as carbon monoxide and heavy metals conditions for incinerators. The Model Permit module containing conditions for corrective action for solid waste management units under RCRA Section 3004(u) is not quite finished, so it will be mailed separately in the near future when available. The Model Permit does not include a model for: Mobile Treatment Units (MTUs); Research, Development, and Demonstration (RD&D) Permits; or miscellaneous units (Subpart X). The Protocol however does contain a checklist for RD&D Permits.

Some Regional Permit Writers suggested that it would be helpful if the Model Permit would identify which conditions are HSWA conditions. This draft takes a cut at identifying these. In some cases, however, conditions are both HSWA and pre-HSWA, and the distinction is less clear (e.g., tank conditions).

This draft Model Permit may be used in developing or finalizing land disposal permits, but its use is not to delay issuance of these permits. That is, use of this Model is not required and may not be possible for current land disposal permits. If Permit Writers wish to use the draft Model Permit, they should keep in mind that this is a draft undergoing Regional as well as additional Headquarters review and should use it with caution.

To assist Permit Writers who may want to use the Model Permit as a starting point for drafting permits, we are making diskettes of the Model Permit available to the Regions and States. When using these diskettes, Permit Writers should keep in mind that this is a draft model, that it contains many notes and other instructional material that need to be followed, and that many site-specific conditions need to be added or tailored to the specific site. Diskettes may be obtained by directly contacting Ms. D.D. Rhodes of A.T. Kearney, Inc. at 703-683-7932.

The initial printing of these guidances was limited to 175 copies. Additional copies are currently being ordered. If you would like additional copies for your staff or to send to your States, please contact Naum Bers at FTS 475-7239.

Based on review comments on these drafts we may send out revised pages, modules, or whole new documents based on the extent of the revisions and on whether the revisions are done in stages rather than one complete new revision. For example, because of the importance of the incinerator modules in FY 89, if appropriate, we will revise those modules first. Even in the longer term, these are considered to be dynamic documents; that is, improvements and revisions are expected as additional rules, policies, and guidances are developed or revised, and better language is developed. Therefore, the longer range plan is to periodically send out revised pages, modules, or whole documents as needed.

Comments or questions on the attached guidances should be addressed to Kenneth Shuster, Permits and State Programs Division (OS-340), Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C. 20460, or FTS 382-2214.

Attachments

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Regional DDs w/o attachments

MODULE VII(A) - LAND TREATMENT OPERATIONS

[Note: This permit module should be included for land treatment operations only after the Permittee has successfully demonstrated that hazardous constituents in the waste can be completely degraded, transformed, or immobilized according to the conditions in Permit Module VII(B) - Land Treatment Demonstrations.]

[Note: In general, a single permit module should be used if multiple land treatment units will be covered by the same Permit for a given facility. However, it is acceptable to include multiple land treatment modules if, in the Permit Writer's judgment, the characteristics and permit conditions for each unit are sufficiently different to warrant multiple modules.]

[Note: Waste analysis requirements (40 CFR 264.13) and closure requirements (40 CFR 264.280) for land treatment normally are contained as attachments to the Waste Analysis Plan and the Closure Plan. Post-Closure requirements (40 CFR 264.280) normally are contained in the Post-Closure Permit Module (Module XIII). The Post-Closure Care Plan is attached to Permit Module II which covers general facility conditions.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

VII(A).A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information: description of each land treatment unit (including dimensions, location, run-on control system, and run-off management system); wind control devices (i.e., tillage or aeration system); description of wastes that may be handled; specify any food-chain crops that may be grown; any unique or special features associated with the activity; and a reference to any special permit conditions.]

VII(A).B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

The Permittee may treat hazardous wastes under the following conditions:

VII(A).B.1. **The Permittee may treat the following wastes in the land treatment program, subject to the terms of this permit and as described below: [40 CFR 264.271(a)(1); 264.271(b); and 264.273(a)(1)]**

Description of Hazardous Waste	Hazardous Waste No.	Significant Hazardous Constituents [from Appendix VIII]	Waste Application Rate
[Example: Tank Bottoms	K052	Tetraethyl Lead, Benzene, Toluene	bbls/acre/application]

[Note: Under "Description of Hazardous Waste," the Permit Writer should provide only a brief generic description, not comprehensive characteristics.]

VII(A).B.2. The Permittee is prohibited from treating wastes that are not identified in Permit Condition VII(A).B.1.

[Note: The Permit Writer may also include here a list of specific wastes or materials that are prohibited.]

VII(A).C. TREATMENT PROGRAM

The Permittee may implement a land treatment program that is designed to ensure that hazardous constituents placed in or on the treatment zone are degraded, transformed or immobilized within the treatment zone according to Permit Attachment VII(A)-1. [40 CFR 264.271(a)]

[Note: The treatment program must include the following elements:

1. **Specification of wastes that are capable of being treated at the unit based on a land treatment demonstration.**
2. **List of hazardous constituents that are expected to be in, or derived from, the wastes to be land treated based on waste analysis.**
3. **Description of the theory behind the type of treatment (e.g., biodegradation) and the expected by-products.**
4. **Unsaturated zone monitoring provisions meeting the requirements of 40 CFR 264.278.**
5. **Vertical and horizontal dimensions of the treatment zone. The maximum depth of the treatment zone must not be more than five feet from the initial soil surface and more than three feet above the seasonal high water table.**
6. **Description of the barrier between the initial soil surface and the seasonal high water table.]**

VII(A).D. DESIGN, CONSTRUCTION, AND OPERATING REQUIREMENTS

The Permittee shall design and operate the land treatment system according to the following requirements:

VII(A).D.1. The Permittee shall [design, construct] operate, and maintain the treatment unit according to the plans and specifications contained in Permit Attachment VII(A)-2. [40 CFR 264.273(a)]

[Note: The Permit Writer should briefly specify the rate and method of waste application to the treatment zone, method of introducing oxygen, measures to control soil pH, measures to enhance microbial or chemical reactions, and measures to control moisture and nutrient content.]

VII(A).D.2. The Permittee shall [design, construct] operate, and maintain the treatment zone to minimize run-off of hazardous constituents during the active life of the land treatment unit, according to the plans and specifications contained in Permit Attachment VII(A)-3. [40 CFR 264.273(b)]

VII(A).D.3. The Permittee shall [design, construct] operate, and maintain the run-on control system, according to the plans and specifications contained in Permit Attachment VII(A)-4. [40 CFR 264.273(c)]

[Note: The plans and specifications contained in Permit Attachment VII(A)-4 must demonstrate that the run-on control system is capable of preventing flow onto the treatment zone during peak discharge from at least a 24-hour, 25-year storm.]

VII(A).D.4. The Permittee shall [design, construct] operate, and maintain a run-off management system, according to the plans and specifications contained in Permit Attachment VII(A)-5. [40 CFR 264.273(d)]

[Note: The plans and specifications contained in Permit Attachment VII(A)-5 must demonstrate how the run-off management system will collect and control at least the water volume resulting from a 24-hour, 25-year storm.]

VII(A).D.5. The Permittee shall manage the run-on and run-off collection and holding facilities to maintain the design capacity of the systems, according to the design plans and operating practices specified in Permit Attachment VII(A)-6. [40 CFR 264.273(e)]

VII(A).D.6. The Permittee shall manage the treatment zone to control wind dispersal of particulate matter, according to the methods specified in Permit Attachment VII(A)-7. [40 CFR 264.273(f)]

[Note: Include Permit Condition VII(A).D.6. if the treatment zone contains particulate matter that is potentially subject to wind dispersal. If Permit Condition VII(A).D.6. does not apply, the Permit Writer should include a condition which prohibits placement of dispersible particulate matter in the treatment zone.]

VII(A).E. UNSATURATED ZONE SAMPLING AND MONITORING

The Permittee shall establish an unsaturated zone monitoring program that meets the following conditions:

VII(A).E.1. The Permittee shall monitor the soil and soil-pore liquid to determine if any of the hazardous constituents specified in Permit Condition VII(A).B.1. migrate out of the treatment zone. [40 CFR 264.278(a)]

[Note: The Permit Writer may require monitoring for principal hazardous constituents (PHCs) in lieu of the constituents specified in Permit Condition VII(A).B.1. PHCs are hazardous constituents, contained in the wastes to be applied at the unit, that are the most difficult to treat, considering the combined effects of degradation, transformation, and immobilization. The Permit Writer can establish PHCs if, based on waste analyses, treatment demonstrations, or other data, that effective degradation, transformation, or immobilization of the PHCs will assure treatment to at least equivalent levels for the other hazardous constituents in the wastes. The PHCs should be specified in Permit Condition VII(A).E.1.]

VII(A).E.2. The Permittee shall [**design, install**] operate, and maintain an unsaturated zone monitoring system, according to the plans and specifications contained in Permit Attachment VII(A)-8. [40 CFR 264.278(b)]

[Note: These plans and specifications should include sampling locations, points and depths, and procedures for selecting sampling locations and sampling equipment.]

VII(A).E.3. The Permittee shall **[specify or establish]** a background value for each hazardous constituent (identified in Permit Condition VII(A).E.1.) to be monitored. [40 CFR 264.278(c)]

[Note: The Permit Writer should specify the background values for each constituent or the procedures to be used to calculate the background values according to 40 CFR 264.278(c).]

VII(A).E.4. The Permittee shall conduct soil monitoring and soil-pore liquid monitoring immediately below the treatment zone, according to the procedures contained in Permit Attachment VII(A)-9. [40 CFR 264.278(d)]

[Note: The Permit Writer should specify the frequency and timing of soil-pore liquid monitoring after considering the frequency, timing, and rate of waste application and precipitation events and the soils permeability.]

VII(A).E.5. The Permittee shall follow the sampling and analysis procedures, according to the plans and procedures contained in Permit Attachment VII(A)-10. [40 CFR 264.278(e)]

[Note: As a minimum, Permit Attachment VII(A)-10 should specify procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, and chain-of-custody control.]

VII(A).E.6. The Permittee shall determine whether there is a statistically significant change over background values for any hazardous constituent monitored under Permit Condition VII(A).E.1. each time the monitoring required by Permit Condition VII(A).E.4. is conducted. [40 CFR 264.278(f)] **This determination shall be made using the statistical procedures contained in Permit Attachment VII(A)-11.** [40 CFR 264.278(f)(1) and (3)] **The Permittee shall make this determination within ___ days after completion of** sampling. [40 CFR 264.278(f)(2)]

[Note: The Permit Writer should specify the time period for making the determination in accordance with 40 CFR 264.278(f)(2). The Permit Writer should consider the complexity of the statistical test and the availability of laboratory facilities to conduct the analyses of soil and soil-pore liquid samples.]

VII(A).E.7. If the Permittee determines, pursuant to Permit Condition VII(A).E.6., that there is a statistically significant increase of hazardous constituents below the treatment zone, he shall notify the Regional Administrator of this finding in writing within seven days, indicating which constituents have shown statistically significant increases, and apply for a permit modification within 90 days to modify the operating practices at the facility to maximize the success of degradation, transformation, or immobilization processes in the treatment zone. [40 CFR 264.278(g)]

VII(A).E.8. The Permittee need not submit the permit modification required by Permit Condition VII(A).E.7., if he successfully demonstrates in writing to the Regional Administrator within 90 days, that a source other than the regulated unit caused the increase or that the increase resulted from an error in sampling, analysis or evaluation. The Permittee shall apply for a permit modification within 90 days to modify the unsaturated zone monitoring program at the facility. [40 CFR 264.278(h)]

VII(A).F. INSPECTION SCHEDULES AND PROCEDURES

The Permittee shall inspect the land treatment unit weekly, after storms, and in accordance with the inspection schedule in Permit Attachment II-3 to detect evidence of: [40 CFR 264.273(g)]

VII(A).F.1. Deterioration, malfunctions, or improper operation of the run-on and run-off control system.

VII(A).F.2. Improper functioning of wind dispersal control measures [if applicable].

VII(A).G. RECORDKEEPING AND REPORTING

The Permittee shall include hazardous waste application dates and rates in the operating record. [40 CFR 264.279].

VII(A).H. CLOSURE AND POST-CLOSURE CARE

VII(A).H.1. The Permittee shall close the land treatment unit, according to the procedures in the Closure Plan, Permit Attachment II-9, and shall perform the following as part of the closure: [40 CFR 264.280]

VII(A).H.1.a. The Permittee shall continue all operations (including pH control) that are necessary to maximize degradation, transformation, or immobilization of hazardous constituents within the treatment zone, in accordance with Permit Conditions VII(A).D.1. and VII(A).D.2., except to the extent such measures are inconsistent with Permit Condition VII(A).H.1.g., during the closure period.

VII(A).H.1.b. The Permittee shall continue all operations in the treatment zone to minimize run-off of hazardous constituents, in accordance with Permit Condition VII(A).D.3., during the closure period.

VII(A).H.1.c. The Permittee shall maintain the run-on control system, in accordance with Permit Condition VII(A).D.4., during the closure period.

VII(A).H.1.d. The Permittee shall maintain the run-off management system, in accordance with Permit Condition VII(A)D.5., during the closure period.

VII(A).H.1.e. The Permittee shall control wind dispersal of particulate matter, in accordance with Permit Condition VII(A).D.7., during the closure period.

[Note: The Permit Writer should include Permit Condition VII(A).H.1.e. only if the treatment zone contains particulate matter that is potentially subject to wind dispersal.]

VII(A).H.1.f. The Permittee shall continue to comply with any prohibition or condition concerning growth of food-chain crops, in accordance with Permit Condition VII(A).I., during the closure period.

VII(A).H.1.g. The Permittee shall continue unsaturated zone monitoring, in accordance with Permit Condition VII(A).E., except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone, during the closure period.

VII(A).H.1.h. The Permittee shall establish a vegetative cover on the portion of the unit being closed, at such time that the cover will not substantially impede degradation, transformation, or immobilization of hazardous constituents in the treatment zone.

[Note: The vegetative cover must be capable of maintaining growth without extensive maintenance.]

VII(A).H.2. When closure is completed, the Permittee should submit to the Agency a certification by an independent, qualified soil scientist that the unit has been closed in accordance with the specifications in the approved closure plan.

VII(A).H.3. After final closure, the Permittee shall follow the plans and procedures in the approved Post-Closure Plan contained in Permit Attachment II-11 and the Post-Closure Permit Module (Module XIII). [40 CFR 264.280]

VII(A).I. SPECIAL REQUIREMENTS FOR FOOD-CHAIN CROP PROTECTION

[Note: The Permit Writer should include Permit Condition VII(A).I.1. if the Permittee has successfully demonstrated that there is no substantial risk to human health from the growth of food-chain crops in or on the treatment zone, in compliance with 40 CFR 264.276(a). If this condition does not apply, the Permit Writer should add a condition to Permit Condition VII(A).D. prohibiting the growth of food-chain crops.]

VII(A).I.1. The Permittee shall grow **[the Permit Writer should specify the food-chain crops that may be grown in or on the treatment zone]**, according to the plans and procedures specified in Permit Attachment VII(A)-12. [40 CFR 264.276(a)]

[Note: Permit Attachment VII(A)-12 must demonstrate how the Permittee shall comply with 40 CFR 264.276(a). It should include the following:

(a) Characteristics of the food-chain crop for which the demonstration will be made.

(b) Characteristics of the waste, treatment zone, and waste application method and rate to be used in the demonstration.

(c) Procedures for crop growth, sample collection, sample analysis, and data evaluation.

(d) Establish a maximum concentration of hazardous constituents to be found in the crop.

(e) Characteristics of the comparison crop including the location and conditions under which it was or will be grown.]

[Note: The Permit Writer should include Permit Condition VII(A).I.2. if cadmium is contained in the wastes placed in the treatment zone.]

VII(A).I.2. The Permittee shall not grow food-chain crops in the treatment zone (where waste containing cadmium is present), unless all of the conditions of 40 CFR 264.276(b) are met.

VII(A).J. SPECIAL LAND TREATMENT PROVISIONS FOR IGNITABLE OR REACTIVE WASTES

[Note: The Permit Writer should include this condition if a land treatment unit receives ignitable or reactive wastes.]

The Permittee shall not place ignitable or reactive waste in the land treatment unit, unless the procedures specified in Permit Attachment VII(A)-13 are followed. [40 CFR 264.281]

[Note: The Permit Writer should ensure that Permit Attachment VII(A)-13 clearly documents how the Permittee will comply with the requirements of 40 CFR 264.281. Perm 40 CFR 264.281(a), the Permittee shall not place ignitable or reactive waste in the treatment zone, unless the waste is immediately incorporated into the soil so that: (1) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste in 40 CFR 261.21 or 261.23 (The General Requirements for Ignitable and Reactive Wastes) and the precautions in 40 CFR 264.17(b) are complied with or (2) the waste is managed in such a way that it is protected from any materials or conditions which may cause it to ignite or react.]

VII(A).K. SPECIAL LAND TREATMENT PROVISIONS FOR INCOMPATIBLE WASTES

[Note: The Permit Writer should include this condition if a land treatment unit stores incompatible wastes.]

The Permittee shall not place incompatible wastes, or incompatible wastes and materials, in or on the same treatment zone, unless the procedures specified in Permit Attachment VII(A)-14 are followed. [40 CFR 264.17(b)]

[Note: The Permit Writer should ensure that Permit Attachment VII(A)-15 clearly specifies how the Permittee shall comply demonstrate how the Permittee will comply with the requirements of 40 CFR 264.17(b).]

VII(A).L. SPECIAL LAND TREATMENT PROVISIONS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026 and F027 [HSWA]

[Note: The Permit Writer should include this section if the land treatment unit manages any of the special "F" wastes.]

The Permittee may place hazardous wastes **[specify which of the following]** F020, F021, F022, F023, F026, or F027 in a land treatment unit in accordance with the waste management plan contained in Permit Attachment VII(A)-16. [40 CFR 264.283]

[Note: The Agency must approve the waste management plan developed under 40 CFR 264.283. In evaluating a proposed waste management plan, the following factors must be considered:

1. **Volume and application rate of the waste;**
2. **Chemical and physical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;**
3. **Attenuation properties of underlying and surrounding soils or other materials;**
4. **Mobilizing properties of other materials co-disposed with these wastes; and**
5. **Effectiveness of additional treatment, design, or monitoring techniques.**

In evaluating the proposed plan, the Regional Administrator may determine that additional design, operating, and monitoring requirements are necessary in order to reduce the possibility of migration of these wastes to ground water, surface water, or air to protect human health and the environment.]

VII(A).M. SPECIAL LAND TREATMENT PROVISIONS FOR HAZARDOUS WASTES RESTRICTED FROM LAND TREATMENT UNITS [HSWA]

[Note: The Permittee may continue to place restricted hazardous waste, as defined in 40 CFR Part 268, in a land treatment unit beyond the prohibition date, if the Permittee has been granted an extension to the date [40 CFR 268.1(c)(1)] or the Permittee has been granted an exemption from the prohibition [40 CFR 268.1(c)(2)], or the waste is contaminated soil or debris resulting from a response action taken under CERCLA Sections 104 or 106 or a corrective action taken under RCRA [40 CFR 268.1(c)(3)]. These wastes may be disposed only until November 8, 1988. The Permit Writer should include this section in the Permit if one or more of these situations occur. The Permit Writer should document the basis for granting all exceptions to the land disposal restrictions in the Administrative Record for this Permit.]

VII(A).M.1. The Permittee may place the following restricted hazardous waste(s) in a land treatment unit subject to the terms of this permit and as described below:

Description of Hazardous Waste	Hazardous Waste No.	Type of Approval	Expiration Date[1]	Significant Hazardous Constituents [from Appendix VIII]	Waste Application Rate
[Example: Tank Bottoms	**F001**	**Exemption**	**August 31, 1998**	**Tetrachloroethylene**	**acre/bbls/ application]**

[Note: The Permit Writer should include Permit Conditions VII(A).M.2. - VII(A).M.4. in situations where case-by-case extensions to the prohibition date have been granted under 40 CFR 268.5.]

VII(A).M.2. **All restricted waste placed in the land treatment unit must be generated at the facility covered by this RCRA permit, unless the restricted waste is from another generating facility that is covered by an EPA- or State-approved application for a restricted waste capacity extension that specifically allows placement into the Permittee's land treatment unit. [40 CFR 268.5(d)]**

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[1] **Extensions may be granted for up to one year from the prohibition date, plus one additional year with proper demonstration. [40 CFR 268.5(e)]**
Exemptions shall be no longer than the term of the RCRA permit for the unit. [40 CFR 268.6(h)]

VII(A).M.3. The Permittee shall immediately notify the Regional Administrator as soon as he has knowledge of any change in the conditions certified in his approved application for the case-by-case capacity extension, dated ______. [40 CFR 268.5(f)]

VII(A).M.4. The Permittee shall submit written progress reports regarding the approved case-by-case capacity extension that: (a) describe the overall progress made toward constructing or otherwise providing alternative treatment, recovery, or disposal capacity; (b) identify any event which may cause or has caused a delay in the development of the capacity; and (c) summarize the steps taken to mitigate the delay. The progress reports must be submitted in accordance with the schedule in Permit Attachment VII(A)-16. [40 CFR 268.5(g)]

VII(A).M.5. The Permittee shall maintain a record of notices and certifications received from generators and waste treatment facilities that restricted waste is accepted from and obtain copies of waste analysis data to determine that the wastes are in compliance with the applicable treatment standards in 40 CFR 268.41. [40 CFR 268.7(c)]

VII(A).N. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this section if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee, before the Permit is issued, are deferred for good cause until after Permit issuance. Appropriate compliance schedules included in the Part B Permit Application should be attached to, or incorporated in, the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity and one identifying the milestone or completion dates. The following is an example of a condition that may apply for a land treatment operation.]

The Permittee shall provide the following information to the Regional Administrator:

Item	Date Due to the Regional Administrator
[Example:	
1. Soil Monitoring and Soil-Pore Liquid Monitoring Procedures	June 25, 1989
2. Sampling and Analysis Procedures	July 30, 1989
3. Documentation of background values for each constituent	September 30, 1989]

PERMIT ATTACHMENTS REFERENCED IN MODULE VII(A) - LAND TREATMENT OPERATIONS

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-3	Facility Inspection Schedule
II-9	Facility Closure Plan
II-11	Post-Closure Care Plan
VII(A)-1	Land Treatment Program
VII(A)-2	Design Plans and Specifications
VII(A)-3	Treatment Zone Run-Off Control Plans and Specifications
VII(A)-4	Run-On Control System Plans and Specifications
VII(A)-5	Run-Off Management System Plans and Specifications
VII(A)-6	Run-On And Run-Off Collection and Holding Facilities Design Plans and Operating Practices
VII(A)-7	Wind Dispersal Control Program
VII(A)-8	Unsaturated Zone Monitoring System
VII(A)-9	Soil Monitoring and Soil-Pore Liquid Monitoring Procedures

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
VII(A)-10	Sampling and Analysis Procedures
VII(A)-11	Statistical Procedures
VII(A)-12	Food-Chain Crops Plans and Procedures
VII(A)-13	Ignitable or Reactive Waste Plans and Procedures
VII(A)-14	Incompatible Waste Management Plan
VII(A)-15	Special "F" Waste Management Plan
VII(A)-16	Schedule for Submitting Progress Reports on Developing Alternatives for Handling "Banned" Waste(s)

MODULE VII(B) - LAND TREATMENT DEMONSTRATIONS

[Note: Before waste can be applied to a land treatment zone, the Permittee must demonstrate that hazardous constituents in the waste can be completely degraded, transformed, or immobilized. If the Permittee intends to conduct field tests or laboratory analyses to make this demonstration, the Permittee must obtain a treatment or disposal permit under 40 CFR 270.63. This module covers the necessary permit conditions for a demonstration under 40 CFR 270.63(a) and (b). When a land treatment demonstration program has been successfully completed, the Permit Writer should use Permit Module VII(A) to provide for compliance with all of the requirements of 40 CFR Part 264, Subpart M.]

[Note: In general, a single permit module should be used if multiple land treatment demonstrations will be covered by the same permit for a given facility. However, it is acceptable to include multiple land treatment demonstration modules if, in the Permit Writer's judgment, the treatment characteristics and permit conditions are sufficiently different for each demonstration to warrant multiple modules.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

VII(B).A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information: description of wastes that may be handled and their application rates; a description of the unit that will be simulated in the demonstration including treatment zone characteristics, theory of treatment, climatic conditions including range of optimal conditions (i.e., percent of moisture, pH, and nutrient level), a description of field tests, laboratory analyses, available data or operating data; any special features associated with the operation; and a reference to any special permit conditions.]

VII(B).B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

VII(B).B.1. The Permittee may treat hazardous wastes under the following conditions: the Permittee may conduct a land treatment demonstration for the wastes listed below. Any field test or laboratory analysis conducted in order to make this demonstration must be likely to show that the following hazardous constituents will be completely degraded, transformed, or immobilized in the treatment zone of the existing or proposed land treatment unit: [40 CFR 264.272]

Description of Hazardous Waste	Hazardous Waste No.	Data Source	Type of Test	Waste Application Rate
[Example: Refinery DAF sludge	K048	a. Literature sources b. Bench-scale test report	Field test at the facility	bbls/acre/test]

[Note: Under "Description of Hazardous Waste," the Permit Writer should provide only a brief generic description, not comprehensive characteristics.]

VII(B).B.2. The Permittee is prohibited from treating wastes that are not identified in Permit Condition VII(B).B.1.

VII(B).C. DURATION OF DEMONSTRATIONS

Field tests and laboratory analyses during land treatment demonstration shall be completed by ___________.

[Note: The Permit Writer should specify the completion date(s) for field tests and laboratory analyses.]

VII(B).D. LAND TREATMENT DEMONSTRATION REQUIREMENTS

The Permittee shall conduct the demonstrations in accordance with the plans and specifications contained in Permit Attachment VII(B)-1. [40 CFR 264.272]

[Note: The Permit Writer should specify the testing, analytical, design, and operating requirements (including, in the case of field tests, the horizontal and vertical dimensions of the treatment zone, waste application rates, factors to be controlled (e.g., moisture, pH, nutrients), monitoring parameters and procedures, closure, and clean-up activities), in accordance with the requirements of 40 CFR 264.272(b).]

VII(B).E. DEMONSTRATION TESTS AND ANALYTICAL PROCEDURES

The Permittee shall conduct the demonstration using the testing, analytical procedures, and data sources specified in Permit Attachment VII(B)-2. [40 CFR 264.272(c)]

[Note: The Permit Writer should specify testing and analytical requirements [40 CFR 264.272(c)] that are necessary tc conduct a demonstration.]

VII(B).F. RECORDKEEPING AND REPORTING

VII(B).F.1. The Permittee shall enter all monitoring, testing, and analytical data obtained, pursuant to Permit Conditions VII(B).D. and VII(B).E., in the operating record. [40 CFR 264.73]

VII(B).F.2. The Permittee shall report the results of the demonstration program to the Regional Administrator not later than ___ days after completion of the analyses.

[The Permit Writer should specify the time frame required for submitting the demonstration report.]

VII(B).F.3. The Permittee shall submit a certification, signed by a person authorized to sign a permit application or report under 40 CFR 270.11, that the field tests and laboratory analyses have been carried out in accordance with the conditions specified in the Permit for conducting such tests and analyses.

[Note: Include Permit Condition VII(B).F.3. if the Permittee has been issued a two-phase permit and has completed the treatment demonstration.]

PERMIT ATTACHMENTS REFERENCED IN MODULE VII(B) - LAND TREATMENT DEMONSTRATIONS

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
VII(B)-1	Plans and Specifications for the Land Treatment Demonstration
VII(B)-2	Testing, Analytical Procedures, and Data Sources

MODULE VIII - LANDFILLS

[Note: Include this permit module when the Permittee is disposing of hazardous waste in landfills. Waste analysis requirements (40 CFR 264.13) and closure requirements (40 CFR 264.310) for landfills are normally contained as attachments to the Permit in the Waste Analysis Plan and Closure Plan. Post-closure requirements (40 CFR 264.310) for landfills normally are contained in the Post-Closure permit module (Module XIII). The Post-Closure Care Plan is incorporated in Module II which covers general facility conditions.]

[Note: In general, a single permit module should be used if two or more landfills will be covered by the same permit for a given facility. However, it is acceptable to include two or more landfill modules if, in the Permit Writer's judgment, tank system characteristics and permit conditions are sufficiently different to warrant multiple tank system modules.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

VIII.A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following: general description (including dimensions and capacity [cubic yards]), liner description (including type of material and thickness for each liner), description of leachate collection and removal system, description of type of wastes disposed; any unique or special features associated with the activity, and a reference to any special permit conditions.]

VIII.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

The Permittee may dispose of specific hazardous wastes under the following conditions:

VIII.B.1. The Permittee may dispose of the following hazardous wastes in [specify landfills and/or landfill cells], subject to the terms of this Permit:

Landfill and/or Landfill Cell Designation	Capacity	Dimensions of [Specify Landfill and/or Landfill Cell]	Description of Hazardous Waste	Hazardous Waste No.
[Example:				
South Cells 1 and 2	**2,200 yd^3**	**20 ft x 60 ft x 50 ft deep**	**Dust from steel furnace**	**K061**
			Lead smelting dust	**K069]**

[Note: If the hazardous wastes disposed in the landfill are numerous, the Permit Writer may provide a reference here to an attachment, and attach to this permit module a list of these wastes. Under "Description of Hazardous Waste," the Permit Writer should provide only a brief general description, not comprehensive characteristics where a Hazardous Waste Number is provided for reference.]

VIII.B.2. The Permittee is prohibited from disposing in landfills any hazardous waste that is not included in Permit Condition VIII.B.1.

[Note: The Permit Writer may also include here a list of specific wastes or materials that are prohibited.]

VIII.C. DESIGN AND OPERATING REQUIREMENTS

[Note: Permit Conditions VIII.C.1. - VIII.C.3., and VIII.C.5. - VIII.C.8. apply to the following: a landfill that first received waste on or after November 8, 1984, and continued to receive waste unitl May 8, 1985, each new landfill, each new landfill cell at an existing facility, each replacement of an existing landfill cell, and each lateral expansion of an existing landfill unit. A landfill that last received waste prior to May 8, 1985 and is no longer active must be closed in accordance with the requirements of 40 CFR 264.310 and is not subject to any of these conditions.]

[Note: If a Permittee is granted an exemption from the double liner requirements [40 CFR 264.301(c)] in accordance with 40 CFR 264.301(d), then Permit Conditions VIII.C.3. - VIII.C.8. apply to the landfill. In addition, the Permittee is exempt from Permit Condition VIII.C.1. and is subject to the requirements of 40 CFR 264.301(d). This exemption must be specified in the Permit. The Permit Writer should add a condition to the Permit stating the following: "The Permittee is exempt from the double liner requirement and is subject to the requirements of 40 CFR 264.301(d)."]

[Note: If a Permittee has a monofill and is granted an exemption from the double liner requirement [40 CFR 264.301(c)], in accordance with 40 CFR 264.301(e), then Permit Conditions VIII.C.4.- VIII.C.8. apply. to the landfill.]

[Note: The Permit Writer's justification for granting any exemptions from the double liner requirements should be included in the Administrative Record for this Permit.]

The Permittee shall design and operate the landfill(s) under the following conditions:

VIII.C.1. The Permittee shall install two [or more] liners and a leachate collection and removal system (one above and one between the liners) for each cell [or trench or area], in accordance with the design plans and reports contained in Permit Attachment VIII-1. [40 CFR 264.301(c)]

[Note: Detailed design drawings of each liner and the leachate collection and removal system and engineering reports contained in Permit Attachment VIII-1, must demonstrate how the Permittee will meet all of the requirements of 40 CFR 264.301(c).]

[Note: The Permit Writer should provide a brief description of the liners (e.g., construction materials, thickness, permeability) and leachate collection and removal system (e.g., construction materials, thickness and permeability of drainage layer). Example language is as follows: The primary liner shall consist of 0.45-mil HDPE liner that is seam-welded and a composite secondary liner, located four feet below the primary liner, consisting of a 0.4-mil HDPE liner and three feet of compacted clay having a permeability not greater than 10^{-8} cm/sec. The leachate collection and removal system shall consist of a drainage tile system embedded in a course sand media of 1×10^{-1} cm/sec or greater permeability, discharging to a sump with a level-controlled positive displacement pump, discharging to Tank 002 for subsequent testing and discharge to NPDES-regulated Outfall 002 or to the leachate treatment system.]

VIII.C.2. Collected leachate must be managed in accordance with the design plans and reports contained in Permit Attachment VIII-2.

[Note: In addition, the Permit Writer should specify in the Permit how collected leachate will be managed. The following conditions are offered as examples:

1. **Collected leachate shall be collected in the leachate storage tank, T-105, and subsequently transported off site within 90 days to a permitted hazardous waste management facility.**

2. **The Permittee shall obtain an NPDES permit by October 1, 1989 for the leachate discharged to the Wabash River.]**

[Note: Use Permit Condition VIII.C.3. if the Regional Administrator finds that a landfill with alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents into the ground water or surface water at least as effectively as the requirements of 40 CFR 264.301(c). The Permit Writer should specify in the Permit all design and operating practices and location characteristics that are necessary to ensure compliance with 40 CFR 264.301(d). Refer to the detailed plans and engineering and hydrogeologic reports of the alternative design and operating practices contained in Permit Attachment VIII-1.]

VIII.C.3. The Permittee shall locate, [construct,] operate, and maintain the landfill as specified in Permit Attachment VIII-1(a), so as to prevent the migration of any hazardous constituents into the ground watr or surface water, at least as effectively as the liners and leachate collection and removal systems oulined in 40 CFR 264.301(c). [40 CFR 264.301(d)]

[Note: Use Permit Condition VIII.C.4. if the Agency waives the double liner requirements for a monofill in accordance with the 40 CFR 264.301(e). Permit Attachment VIII-1 should contain detailed plans and engineering and hydrogeologic reports of the alternative design and operating requirements. The Permit Writer should specify in the Permit any additional operating practices and location characteristics that are necessary to ensure compliance with 40 CFR 264.301(e). Note that conditions imposed by the Regional Administrator override any conflicting plans contained in the permit application.]

VIII.C.4. The Permittee shall design, construct, operate, and maintain the monofill in accordance with the plans and reports contained in Permit Attachment VIII-1 (monofill alternative). [40 CFR 264.301(e)]

VIII.C.5. The Permittee shall design, construct, operate, and maintain a run-on control system in accordance with the design plans, specifications, and operating practices contained in Permit Attachment VIII-3. [40 CFR 264.301(f)]

VIII.C.6. The Permittee shall design, construct, operate, and maintain a run-off management system in accordance with the design plans, specifications, and operating practices contained in Permit Attachment VIII-4. [40 CFR 264.301(g)]

VIII.C.7. The Permittee shall empty or otherwise manage run-on and run-off collection and holding facilities to maintain the design capacity of the system(s) in accordance with the design plans and operating practices specified in Permit Attachment VIII-5. [40 CFR 264.301(h)]

[Note: The Plans and specifications contained in Permit Attachment VIII-5 (or the Administrative Record) must demonstrate that the run-on and run-off control system(s) can collect and control at least the water volume resulting from a 24-hour, 25-year storm.]

[Note: Use Permit Condition VIII.C.8. if the landfill contains particulate matter that is subject to wind dispersal. If Permit Condition VIII.C.8. does not apply, the Permit Writer should add a condition to prohibit placement of dispersable particulate matter in the landfill.]

VIII.C.8. The Permittee shall cover or otherwise manage the landfill to control wind dispersal of particulate matter, in accordance with the methods specified in Permit Attachment VIII-6. [40 CFR 264.301(i)]

VIII.D. INSPECTION SCHEDULES AND PROCEDURES

[Note: The Permit Writer should include Permit Conditions VIII.D.1. - VIII.D.3. for new or expanded landfills; otherwise only Permit Condition VIII.D.3. is necessary.]

The Permittee shall inspect the landfill in accordance with the following conditions:

VIII.D.1. The Permittee shall inspect the liners and cover systems during construction and installation for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). [40 CFR 264.303(a)]

VIII.D.2. The Permittee shall inspect the landfill immediately after construction or installation. [40 CFR 264.303(a)]

VIII.D.2.a. Synthetic liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters.

VIII.D.2.b. Soil-based and admixed liners and covers must be inspected for imperfections including lenses, cracks, channels, root holes, or other structural nonuniformities that may cause an increase in the permeability of the liner or cover.

VIII.D.3. The Permittee shall inspect the landfill (including the liner and leachate collection system) in accordance with the inspection schedule, Permit Attachment II-3. [40 CFR 264.303(b)]

The landfill must be inspected weekly and after storms to detect evidence of any of the following:

1. Deterioration, malfunctions, or improper operation of run-on and run-off systems.
2. Proper functioning of wind dispersal control systems [if applicable].
3. The presence of leachate in, and proper functioning of, leachate collection and removal systems [if applicable].

[Note: The Permit Writer should confirm that the Permittee has addressed all major parameters in the proposed inspection schedule. These parameters include monitoring well condition, cover, liner(s), gas collection system, and leachate collection system components.]

VIII.E. CELL LOCATION SURVEYING

The Permittee shall maintain the following items in the operating record: [40 CFR 264.73 and 40 CFR 264.309]

1. A map with the exact location and dimensions (including depth) of each cell with respect to permanently surveyed benchmarks.
2. The types of waste in each cell and the approximate location of each hazardous waste type within each cell.

VIII.F. CLOSURE AND POST-CLOSURE CARE

The Permittee shall conduct closure and post-closure activities in accordance with the following conditions:

VIII.F.1. At final closure of the landfill, or upon closure of any cell, the Permittee shall follow the procedures in the approved closure plan contained in Permit Attachment II-9. [40 CFR 264.310(a)]

VIII.F.2. After final closure, the Permittee shall follow the plans and procedures in the approved Post-Closure Care Plan in Permit Attachment II-11 and in the Post-Closure Permit Module (Module XIII). [40 CFR 264.310(b)]

VIII.G. SPECIAL LANDFILL PROVISIONS FOR IGNITABLE OR REACTIVE WASTES

[Note: The Permit Writer should include this section if ignitable or reactive wastes are disposed in the landfill.]

The Permittee shall manage ignitable or reactive wastes in accordance with the following conditions:

VIII.G.1. The Permittee shall not place ignitable or reactive waste in the landfill, unless the procedures specified in Permit Attachment VIII-7 are followed. [40 CFR 264.312]

[Note: The Permit Writer should ensure that Permit Attachment VIII-7 clearly documents how the Permittee will comply with 40 CFR 264.312(a). In accordance with the regulations, ignitable or reactive wastes can be placed in a landfill if: (a) the waste is treated or mixed before or immediately after placement in the landfill so that the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste and (b) compliance with 40 CFR 264.17 (General Requirements for Ignitable, Reactive, or Incompatible Wastes) is attained.]

[Note: Ignitable wastes in containers may be landfilled without meeting the requirements of Permti Condition

VIII.G.1., if they are disposed in such a way that they are protected from any material or conditions that may cause them to ignite. Minimum requirements are listed in 40 CFR 264.312(b). Use Permit Condition VIII.G.2. if ignitable wastes in containers will be disposed.]

VIII.G.2. Ignitable wastes in containers may be disposed of in the landfill cells designated in Permti Condition VIII.B.1. provided that the following conditions are met: [40 CFR 264.312(b)]

VIII.G.2.a Ignitable wastes must be disposed of in non-leaking containers which have been inspected just prior to being placed in the landfill.

VIII.G.2.b Containers must be handled and placed in the landfill in a manner to avoid heat, sparks, rupture, or other conditions that might cause ignition of the wastes.

VIII.G.2.c Ignitable wastes must be covered daily with six inches of soil or other non-combustible material.

VIII.G.2.d Containers must not be placed in cells that contain or will contain other wastes that may generate heat sufficient to cause ignition of the waste.

VIII.H. SPECIAL LANDFILL PROVISIONS FOR INCOMPATIBLE WASTES

[Note: The Permit Writer should include this condition if the landfill receives incompatible wastes.]

The Permittee shall not place incompatible wastes, or incompatible wastes and materials, in the same landfill cell, unless the procedures specified in Permit Attachment VIII-8 are followed. [40 CFR 264.217(b)]

[Note: The Permit Writer should ensure that Permit Attachment VIII-8 clearly specifies how the Permittee shall comply with the requirements of 40 CFR 264.17(b) and (c).

VIII.I. SPECIAL LANDFILL PROVISIONS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, and F027 [HSWA]

[Note: The Permit Writer should include this section if the landfill receives any of the special "F" wastes.]

The Permittee may place hazardous wastes [specify which of the following] F020, F021, F022, F023, F026, or F027 in the landfill in accordance with the waste management plan contained in Permit Attachment VIII-9.

[Note: The Regional Administrator must approve the waste management plan developed under 40 CFR 264.317. In evaluating a proposed waste management plan, the following factors must be considered:

1. Volume of the wastes;
2. Chemical and physical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;
3. Attenuation properties of underlying and surrounding soils or other materials;
4. Mobilizing properties of other materials co-disposed with these wastes; and
5. Effectiveness of additional treatment, design, or monitoring techniques.

In evaluating the proposed plan, the Regional Administrator may determine that additional design, operating, and monitoring requirements are necessary in order to reduce the possibility of migration of these wastes to ground water, surface water, or air to protect human health and the environment.]

VIII.J. SPECIAL LANDFILL PROVISIONS FOR HAZARDOUS WASTES RESTRICTED FROM LANDFILL UNITS [HSWA]

[Note: The Permittee may continue to place restricted hazardous waste, as defined in 40 CFR Part 268, in a landfill beyond the prohibition date if the Permittee has been granted an extension to the date [40 CFR 268.1(c)(1)] or the Permittee has been granted an exemption from the prohibition [40 CFR 268.1(c)(2)], or the waste is contaminated soil or debris resulting from a response action taken under CERCLA Sections 104 or 106 or a corrective action taken under RCRA [40 CFR 268.1(c)(3)]: These wastes may be disposed only until November 8, 1988). The Permit Writer should include this section in the Permit if one or more of these situations occur. The Permit Writer should document the basis for granting all exceptions to the land disposal restrictions in the Administrative Record for this Permit.]

VIII.J.1. The Permittee may place the following restricted hazardous waste(s) in a landfill subject to the terms of this permit and as described below:

Landfill and/or Landfill Cell	Hazardous Waste No.	Description of Hazardous Waste	Type of Approval	Expiration Date[1]
[Example: South Cell	F001	Tetrachloroethylene	Exemption	August 31, 1998]

[Note: The Permit Writer should include Permit Conditions VIII.J.2 - VIII.J.4. in situations where case-by-case extensions to the prohibition date have been granted under 40 CFR 268.5.]

VIII.J.2. All restricted waste placed in the landfill must be generated at the facility covered by this RCRA permit, unless the restricted waste is from another generating facility that is covered by an EPA- or State-approved application for a restricted waste capacity extension that specifically allows placement into the Permittee's landfill. [40 CFR 268.5]

VIII.J.3. The Permittee shall immediately notify the Regional Administrator as soon as he has knowledge of any change in the conditions certified in his approved application for the case-by-case capacity extension, dated ______. [40 CFR 268.5(f)]

VIII.J.4. The Permittee shall submit written progress reports regarding the approved case-by-case capacity extension that: (a) describe the overall progress made toward constructing or otherwise providing alternative treatment, recovery or disposal capacity; (b) identify any event which may cause or has caused a delay in the development of the capacity; and (c) summarize the steps taken to mitigate the delay. The progress reports must be submitted in accordance with the schedule in Permit Attachment VIII-10. [40 CFR 268.5(g)]

[Note: Permit Conditions VIII.J.5. and VIII.J.6. only apply to new landfill, replacements of an existing landfill, and each lateral expansion of an existing landfill unit.]

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[1] Extensions may be granted for up to one year from the prohibition date, plus one additional year with proper demonstration. [40 CFR 268.5(e)]
Exemptions shall be no longer than the term of the RCRA permit for the unit. [40 CFR 268.6(h)]

VIII.J.5. The Permittee shall comply with all applicable requirements of 40 CFR Subpart F to protect ground water and all applicable requirements of 40 CFR 264.301(c), (d) and (e).

VIII.J.6. The Permittee shall comply with all applicable requirements of 40 CFR Subpart F to protect ground water and all applicable requirements of 40 CFR 264.221(c), (d), and (e).

VIII.J.7. The Permittee shall maintain records of notices and certifications received from generators and waste treatment facilities that restricted waste is accepted from, and obtain copies of waste analysis data to determine that the wastes are in compliance with the applicable treatment standards in 40 CFR 268.41. [40 CFR 268.7(c)]

VIII.K. SPECIAL LANDFILL PROVISIONS FOR LIQUID WASTE

VIII.K.1. The Permittee shall not place bulk or non-containerized liquid wastes or waste containing free liquids in a landfill. [40 CFR 264.314(b)]

VIII.K.2. The Permittee shall demonstrate the absence of free liquids in either a containerized or a bulk waste by the following test: "Method 9095 (Paint Filter Liquids Test)" as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Publication No. SW-846).

VIII.K.3. The Permittee shall not place containers holding free liquid in the landfill unless: [40 CFR 264.314(d)]

VIII.K.3.a. All free-standing liquid: (i) has been removed by decanting, or other methods; (ii) has been mixed with absorbent or solidified so that free-standing liquid is no longer observed; or (iii) has been otherwise eliminated; or

VIII.K.3.b. The container is no larger than an ampule; or

VIII.K.3.c. The container is designed to hold free liquids for use other than storage (e.g., batteries, capacitors); or

VIII.K.3.d. The container is a lab pack as defined in 40 CFR 264.316 and is disposed of in accordance with Permit Condition VIII.M.

VIII.L. SPECIAL REDUCTION REQUIREMENTS FOR EMPTY CONTAINERS

The Permittee shall not dispose of any containers that are larger than ampules in the landfill unless they are at least 90 percent full when placed in the landfill or they are crushed, shredded, or similarly reduced in volume to the maximum practical extent before placement in the landfill. [40 CFR 264.315]

VIII.M. PROVISIONS FOR THE CONTAINERIZED LANDFILL DISPOSAL OF LAB PACKS

[Note: The Permit Writer should include this section if the landfill disposes of small containers of hazardous waste in overpacked drums (lab packs).]

The Permittee shall dispose of any small containers of hazardous waste in overpacked drums (lab packs) in accordance with the detailed plans and procedures contained in Permit Attachment VIII-11. [40 CFR 264.316]

VIII.N. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this condition if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating Permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee before the Permit is issued are deferred for good cause until after permit issuance. Appropriate compliance schedules included in the Part B Permit Application should be attached to, or incorporated in, the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity, and one identifying the milestone or completion dates. The following is an example of a condition that may apply for a landfill.]

The Permittee shall provide the following information to the Regional Administrator:

Item	Date Due to the Regional Administrator
[Example:	
1. Wind Dispersal Control System	**March 10, 1989**
2. Design Plans, Specifications, and Operating Practices for Run-Off Management System	**June 15, 1989]**

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PERMIT ATTACHMENTS REFERENCED IN MODULE VIII - LANDFILLS

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-3	Facility Inspection Plan
II-9	Closure Plan
II-11	Post-Closure Care Plan
VIII-1	Design Plans and Operating Practices for Liners and Leachate Collection and Removal Systems
VIII-1(a)	Alternative Design Plans and Operating Practices for Liners and Leachate Collection and Removal Systems
VIII-1 (monofill alternative)	Design Plans and Operating Practices for a Monofill
VIII-2	Design Plans and Operating Practices for the Leachate Collection, Removal, and Management System
VIII-3	Design Plans and Operating Practices for the Run-On Control System
VIII-4	Design Plans and Operating Practices for the Run-Off Management System
VIII-5	Design Plans and Operating Practices for the Run-On and Run-Off Collection and Holding Facilities
VIII-6	Wind Disposal Control System
VIII-7	Ignitable and Reactive Waste Management Plan

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Permit Attachment No.	Plan or Document (from the Part B Permit Application)
VIII-8	Incompatible Waste Management Plan
VIII-9	Special "F" Waste Management Plan
VIII-10	Schedule for Submitting Progress Reports on Developing Alternatives for Handling Land-Banned Wastes
VIII-11	Plans and Procedures for the Disposal of Small Containers (Lab Packs) of Hazardous Waste

MODULE IX(A) - INCINERATION

[Note: This module, plus Module IX(B) for Short-Term Incineration, covers the four major phases of incineration operation: (1) shakedown; (2) trial burn; (3) post-trial burn operation; and (4) final operation. This module provides the conditions for final operation for both existing and new incineration units. The Short-Term Incineration Module covers the shakedown, trial burn, and post-trial burn operating phases for new incineration units only. These phases of operation are discussed in 40 CFR 264.344(c).]

[Note: This module is not used for incineration units that qualify for an automatic exemption under 40 CFR 264.340(b). These units must comply only with the waste analysis and closure requirements. For units that are granted an exemption under 40 CFR 264.340(c), parts of this module may be appropriate to use on a case-by-case basis. The Permit Writer should document the basis for granting exemptions in the Administrative Record for this facility.]

[Note: For facilities with more than one incineration unit, a separate permit module should be used for each unit.]

[Note: Waste analysis requirements (40 CFR 264.13) and closure requirements (40 CFR 264.197) for incineration units are generally contained as attachments to the Permit in the Waste Analysis Plan and Closure Plan. The Waste Analysis Plan and Closure Plan must cover the requirements of 40 CFR 264.341 and 40 CFR 264.351, respectively, in accordance with 40 CFR 264.340(b).]

[Note: For new incinerators, some permit conditions will initially be tentative and will need to be finalized after the trial burn results have been evaluated. In this module, the conditions that may be subject to change for new incinerators are marked with an asterisk (*). In crafting actual permit conditions, the Permit Writer should mark tentative conditions with an asterisk, or other designation, and include a note such as the following...*The number in this permit condition is tentative and will be made final after the trial burn results have been evaluated. In the case of maximums, EPA reserves the right to specify any number less than this value as the shut-off limit. In the case of minimums, EPA reserves the right to specify any value higher.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

IX(A).A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion may include some or all of the following information: type of incineration system; types of air pollution control equipment used; system capacity in terms of either heat rate or mass flow rate; key operating conditions, such as combustion temperature (and whether these conditions were based on trial burn results, or data in lieu of a trial burn); a general description of the automatic waste feed cut-off system; the types of waste that may be burned; the principal organic hazardous constituents selected and the rationale for this selection; any unique or special features associated with the operation; and a reference to any special permit conditions.]

IX(A).B. IDENTIFICATION CRITERIA FOR PERMITTED AND PROHIBITED WASTE

[Note: There are two general options for identifying the allowable waste feed to the incinerator, pursuant to 40 CFR 264.344(a). The first option covers situations where it is not practical to name all the wastes that a facility might be permitted to burn. This is a common situation for a commercial off-site facility. In this case, the Permit Writer should identify a set of criteria that establishes limitations on the general physical and chemical characteristics of the waste feed to the incinerator. The second option is most appropriate for incinerators that are used to burn waste from specific processes, such as on-site incinerators. Here, it is usually possible to identify the specific wastes or classes of wastes that the Permittee shall be permitted to burn. For example, a manufacturer of Freon might be permitted to burn the chlorofluorocarbon POHC and other related wastes associated with the production process. Examples of recommended language addressing these two options are presented in Permit Conditions IX(A).B.1. and IX(A).B.2.]

Except during the periods specified in the conditions for Short-Term Incineration under Shakedown Period, Trial Burn and Post-Trial Burn, the Permittee may incinerate the following hazardous wastes, as specified in this Permit and only under the terms of this Permit. The Permittee may only feed the hazardous wastes as identified below [or in Permit Attachment IX(A)-1, List of Wastes] at the facility subject to Permit Conditions IX(A).C. through IX(A).F., and IX(A).H.

IX(A).B.1. **[Option 1. - Off-Site Commercial Facility: Include the following conditions for each waste stream.]** The Permittee shall incinerate only hazardous wastes meeting the following criteria:

- No hazardous constituents shall have a heat of combustion less than that of ______________ [POHC] (______ BTU/lb).

  [Note: Using the heat of combustion method of incinerability ranking, the specified POHC should be the facility's POHC with the lowest heat of combustion. It should be noted that other methods of incinerability ranking, such as thermal stability at low oxygen are available. (See preamble to proposed incineration amendments, Summer 1988.) Use of another ranking system in addition to, or instead of, heat of combustion would require modification of this model condition.]

- The ash content of the waste shall be no greater than ___ percent by weight.*
- The total halide content of the waste shall be no greater than ______ percent by weight.*
- The physical state of the waste feed shall be __ ______. **[specify solid or liquid]**
- No waste, or combination of wastes, with a heating value of less than ______ BTU/lb **[or other appropriate unit of measure]**, shall be fed to the secondary chamber of the incinerator **[or (in the case of a single chamber liquid injection incinerator) to the incinerator]** unless fed in conjunction with auxiliary fuel.
- The viscosity of waste fed to the secondary chamber **[or incinerator, in the case of single chamber liquid injection incinerator]** burner number _____ shall not exceed _______ cp.

IX(A).B.2. **[Option 2 - On-Site Facility]** The Permittee may incinerate only the following hazardous wastes:

Hazardous Waste No.	Description	Feed Rate
[Example: D003, D004, D008	Freezon 123b reactor bottoms ("Tars")	(Specify rate of input in appropriate units--lb/hr)
D001	Freezon 122b rich liquid	(Specify rate of input in appropriate units--lb/hr)]

[Note: The Permit Writer may impose other limitations, such as those under Option 1 above, on the waste feed, as necessary, to ensure compliance with the performance standards of 40 CFR 264.343. All such limitations, however, should be derived from the results of the trial burn or from the data submitted in lieu of a trial burn, or for conditions such as waste feed viscosity, from the burner manufacturer's specifications.]

IX(A).B.3. Throughout operation, the Permittee shall conduct sufficient analysis in accordance with the Waste Analysis Plan, Permit Attachment II-1, to verify that waste fed to the incinerator is within the physical and chemical composition limits specified in this Permit.

[Note: The Permit Writer may also include here a list of specific wastes or materials that are prohibited.]

IX(A).C. CONSTRUCTION, INSTRUMENTATION, AND OPERATIONAL PERFORMANCE REQUIREMENTS

[Note: Permit Condition IX(A).C.1. applies only to new facilities; Permit Condition IX(A).C.2. applies only to existing facilities.]

IX(A).C.1. The Permittee shall construct and maintain the incinerator in accordance with the design plans and specifications contained in Permit Attachment IX(A)-2. The Permittee shall not feed hazardous wastes to the incinerator until Permit Condition I.E.12 (Certification of Construction or Modification) has been complied with.

IX(A).C.2. The Permittee shall maintain the incinerator in accordance with the design plans and specifications contained in Permit Attachment IX(A)-2.

[Note: 40 CFR 264.345(b)(5) requires that the Permit specify any allowable variations in system design during the operation of the incinerator. The Permit Writer should develop additional conditions, as necessary, to cover these variations and/or provide a description of these variations as an attachment to the Permit, Permit Attachment IX(A)-3.]

IX(A).C.3. The Permittee shall install and test all instrumentation in accordance with the design plans, performance specifications, and maintenance procedures contained in Permit Attachment IX(A)-2 prior to handling hazardous wastes in the incinerator unit.

The Permittee shall [design, construct, and] maintain the incinerator so that when operated, in accordance with the operating requirements specified in this permit, it will meet the performance standards specified in Permit Conditions IX.(A).C.4. through IX.(A).C.6. [40 CFR 264.343]

IX(A).C.4. The incinerator shall achieve a destruction and removal efficiency (DRE) of 99.99 percent for each of the following principal organic hazardous constituents (POHC) for each waste feed. The DRE value shall be determined using the method specified in 40 CFR 264.343(a)(1). [40 CFR 264.343(a)(1)]

[Note: Any incinerator burning hazardous wastes F020, F021, F022, F023, F026, or F027 must achieve a DRE of 99.9999 percent for each designated POHC. These POHCs, designated by the Permit Writer, must be more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-p-dioxins and dibenzofurans.] [40 CFR 264.343(a)(2)]

Waste Feed	POHC(s)

IX(A).C.5. The Permittee shall control hydrogen chloride (HCl) emissions, such that the rate of emissions is no greater than the larger of either 1.8 kilograms per hour (4 pounds/hour) or one percent of the HCl in the stack gas, prior to entering any pollution control equipment. [40 CFR 264.343(b)]

IX(A).C.6. The incinerator shall not emit particulate matter in excess of 180 milligrams per dry standard cubic meter (0.08 grains per dry standard cubic foot) when corrected for the amount of oxygen in the stack gas, in accordance with the formula specified in 40 CFR 264.343(c). [40 CFR 264.343(c)]

[Note: The Permit Writer should add the appropriate correction procedure to this condition in cases where a facility operates under conditions of oxygen enrichment. [40 CFR 264.343(c)]

[Note: 40 CFR 264.345(b)(1)-(4) requires the Permit Writer to establish operating limits for carbon monoxide, waste-feed rate, combustion temperature, and a combustion gas velocity indicator. Permit Conditions IX(A).C.7. through IX(A).C.10. cover those requirements. 40 CFR 264.345(b)(6) requires the Permit Writer to establish any other operating requirements (conditions) necessary to ensure compliance with the performance standards. Permit Conditions IX(A).C.11. through IX(A).C.22. are example permit conditions that serve this purpose. These permit conditions incorporate the list of key operating parameters provided by the EPA Guidance on Trial Burn Reporting and Setting Permit Conditions. This guidance should be consulted for assistance in determining which of these conditions apply for a specific facility and the specific method of setting each condition, given the design and operation of the facility and the results of the trial burn or data in lieu of a trial burn.]

Except during the periods specified in the Permit Conditions for Short-Term Incineration under the Shakedown Period, Trial Burn Period, and Post-Trial Burn Period, the Permittee shall feed the wastes described in Permit Condition IX(A).B. to the incinerator only under the following conditions: [40 CFR 264.345]

IX(A).C.7. Carbon monoxide concentration in the stack exhaust gas, monitored as specified in Permit Condition IX(A).E., and corrected for the amount of oxygen in the stack gas, shall not exceed ____ ppm over a one hour rolling average **[or under the alternative format for CO limits, ___ ppm at any time, or ___ ppm for more than ____ minutes in any clock hour].***

IX(A).C.8. The Permittee shall be limited to the following waste feed rates in the following locations:

[Note: The Permit should specify the feed rate of each waste stream type (i.e., solid waste, organic liquid waste) to each combustion chamber. The following are example conditions. The Permit Writer shall select the condition(s) that are most appropriate for the Permit being prepared.]

(a) Maximum primary chamber organic liquid waste feed rate of ________ lb/hr.*

(b) Maximum primary chamber aqueous waste feed rate of ______ lb/hr.*

(c) Maximum primary chamber solid waste feed rate of ________ lb/hr.*

(d) Maximum secondary chamber organic liquid waste feed rate of ________ lb/hr.*

(e) The size of waste containers fed to the primary chamber shall not exceed ______ gallons of capacity.*

IX(A).C.9. Combustion temperature, monitored as specified in Permit Condition IX(A).E., shall be maintained at ___ °F (or °C) or greater.*

[Note: For dual-chamber incinerators, a minimum temperature should be set for each chamber.]

IX(A).C.10. Combustion gas velocity, monitored as specified in Permit Condition IX(A).E., shall be no greater than ___ ft/s.*

IX(A).C.11. The mass feed rates of toxic metals to the incinerator shall not exceed:

Arsenic: _____ (grams/min)
Barium: _____ (grams/min)
Chromium: _____ (grams/min)
Beryllium: _____ (grams/min)
Cadmium: _____ (grams/min)
Antimony: _____ (grams/min)
Lead: _____ (grams/min)
Mercury: _____ (grams/min)
Silver: _____ (grams/min)
Thallium: _____ (grams/min)

[Note: An option to Permit Condition IX(A).C.11., which would be more straightforward to enforce, is to set the limit on the actual concentration of metals in the waste feed. Then only the concentration value is required to determine compliance, rather than the concentration and waste feed rate at a specific point in time. However, this approach provides the Permittee with less flexibility to feed higher concentrations of metals when operating the incinerator at low feed rates.

IX(A).C.12. Atomization fluid pressure (e.g., steam, air) shall be no less than _____ psig.

IX(A).C.13. The turndown ratio for the waste burner shall be no greater than _____.

[Note: Permit Conditions IX(A).C.14. through IX(A).C.16 relate to ensuring compliance with the HCl emission standard in 40 CFR 264.343(b). The Permit Writer must determine which conditions are appropriate for a specific facility depending on the control devices present.]

IX(A).C.14. The $\frac{L}{G}$ ratio to the absorber, monitored as specified in Permit Condition IX(A).E., shall be maintained at no less than ___ [sometimes expressed as gals per thousand cubic feet though usually dimensionless].*

IX(A).C.15. The scrubber effluent pH, monitored as specified in Permit Condition IX(A).E., shall be maintained at a minimum pH of ___.*

IX(A).C.16. The scrubber water delivery (nozzle) pressure, monitored as specified in Permit Condition IX(A).E., shall be maintained at no less than ___ psig.

[Note: Permit Conditions IX(A).C.17. through IX(A).C.22. relate to ensuring compliance with the particulate emission standard in 40 CFR 264.343(c). Note, however, that most facilities will not have all of the devices mentioned. The Permit Writer must determine which conditions are appropriate for a specific facility.]

IX(A).C.17. Pressure drop across the venturi scrubber, monitored as specified in Permit Condition IX(A).E., shall be maintained at no less than ___ psi.*

IX(A).C.18. The scrubber blowdown rate shall be maintained at no less than _____ gpm.*

IX(A).C.19. The power to the electrostatic precipitator, monitored as specified in Permit Condition IX(A).E., shall be maintained at no less than ___ kVA.*

IX(A).C.20. The voltage applied to the ionizing wet scrubber, monitored as specified in Permit Condition IX(A).E., shall be no less than _____ kV.*

IX(A).C.21. Pressure drop across the baghouse, monitored as specified in Permit Condition IX(A).E., shall be no less than ___ psi, nor greater than ____ psi.*

[Note: The Permit Writer may require the Permittee to specify in the Contingency Plan, provisions for maintaining and replacing bags.]

IX(A).C.22. The Permittee shall control fugitive emissions from the combustion zone of the incinerator by maintaining the pressure in the primary combustion chamber, monitored as specified in Permit Condition IX(A).E., to not exceed _____ inches of mercury. [40 CFR 264.345(d)]

[Note: The Permit Writer may specify another method for controlling fugitive emissions. The method must be demonstrated in the Part B Permit Application; this information should be attached to the Permit, Permit Attachment IX(A)-4, and referenced.]

IX(A).C.23. Compliance with the operating conditions specified in Permit Conditions IX(A).C.7. through IX(A).C.22. will be regarded as compliance with the required performance standards in Permit Conditions IX(A).C.4. through IX(A).C.6. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, may justify modification, revocation, or reissuance of the Permit pursuant to 40 CFR 270.41. [40 CFR 264.343(d)]

[Note: It must be understood, by both the Permit Writer and Permittee, that violation of the permit operating conditions can give rise to an enforcement action. If the Permittee complies with the permit

operating conditions, but it is later shown that the performance standards are not being achieved, the permit may be modified or revoke and reissued, but enforcement actions are not available. Thus, each set of operating conditions should directly relate to achieving the performance standards in 40 CFR 264.343.]

IX(A).D. INSPECTION REQUIREMENTS

The Permittee shall inspect the incineration unit in accordance with the Inspection Schedule, Permit Attachment II-3, and shall complete the following as part of these inspections:

IX(A).D.1. The Permittee shall thoroughly, visually inspect the incinerator and associated equipment (including pumps, valves, conveyors, pipes, etc.) for leaks, spills, fugitive emissions, and signs of tampering. [40 CFR 264.347(b)]

IX(A).D.2. The Permittee shall thoroughly, visually inspect the instrumentation for out-of-tolerance monitored and/or recorded operational data.

IX(A).D.3. The Permittee shall test the emergency waste feed cut-off system and associated alarm at least weekly to verify operability, as specified in Permit Condition IX(A).E.1. [40 CFR 264.347(c)]

[Note: If the Permittee demonstrates to the Regional Administrator that the weekly inspections referred to in Permit Condition IX(A).D.3 will unduly restrict or upset operations and that less frequent inspection will be adequate, the Permit Writer should specify that inspection frequency in the permit condition. At a minimum, operational testing must be conducted at least monthly.]

IX(A).E. MONITORING REQUIREMENTS

IX(A).E.1. The Permittee shall maintain, calibrate, and operate monitoring equipment and record the data while incinerating hazardous waste, as specified below:

System Parameter	Monitor Type, Instr. No.	Location	Recording Process	Calibration Frequency
Examples (1) Combustion Tempera-	Type K Thermocouple TIC-900	[Us design drawing numbers to show the location]	[Indicate whether continuous or not]	[Frequency at which the unit is calibrated
(2) Pressure drop across scrubber venturi	Pressure Sensor PDIC-1220			

[Note: At a minimum, this condition must specify monitoring systems that meet the requirements of 40 CFR 264.347(a)(1) and (2). Permit Condition IX(A).E.1. contains example specifications for various operating parameters that must be monitored. Specific parameters should be addressed in the above table. If the Part B Permit Application contains the above information on monitoring practices, in a conveniently organized way and adequately detailed, then the Permit Writer may attach this information, Permit Attachment IX(A)-5, to the Permit instead of using a table in this permit module, and reference the attachment.]

IX(A).E.2 Upon request of the Agency, the Permittee shall perform sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the Permit achieve the performance standards. [40 CFR 264.347(a)(3)]

IX(A).F. WASTE FEED CUT-OFF REQUIREMENTS

IX(A).F.1. The Permittee shall construct and maintain the systems specified below to automatically cut off the hazardous waste feed to the incinerator at the levels specified below. Hazardous wastes shall be fed to the incinerator only when all instruments required by this condition are on line and operating properly.

Parameter	Cut-Off Limits	Test Frequency
Operating parameters to be interlocked to automatic waste-feed cut off i.e., SCC temperature]	[Level at which waste feed will be cut off]	[Frequency at which operational readiness is checked]

[Note: 40 CFR 264.345(e) requires such systems to be constructed to ensure that the operating conditions specified in the Permit are not exceeded. Most cut-off systems are composed of multiple parameters. They include monitors for the operating conditions presented in Permit Condition IX(A).C. along with power failure and flame-out. If the Part B Permit Application adequately provides the above information regarding the automatic waste-feed cut-off system in an organized way and adequately detailed, then the Permit Writer may attach this information, Permit Attachment IX(A)-6, to the Permit, in lieu of using a table in this permit module, and reference the attachment.]

IX(A).F.2. In case of a malfunction of the automatic waste feed cut-off systems, the Permittee shall perform manual shut downs in accordance with the approved procedures in Permit Attachment IX(A)-7. The Permittee shall not restart the incinerator until the problem causing the malfunction has been located and corrected.

IX(A).G. CLOSURE

The Permittee shall follow the procedures in the Closure Plan, Permit Attachment II-9. [40 CFR 264.351]

IX(A).H. RECORDKEEPING

IX(A).H.1. The Permittee shall record and maintain, in the operating record for this permit, all monitoring and inspection data compiled under the requirements of this Permit (see Permit Condition I.E.9.b.). [40 CFR 264.73 and 40 CFR 264.347(d)]

IX(A).H.2. The Permittee shall record in the operating record for this permit the date and time of all automatic waste feed shut-offs, including the triggering parameters, reason for the shut-off, and corrective actions taken. The Permittee shall also record all failures of the automatic waste feed shut-offs to function properly and corrective actions taken.

IX(A).I. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this condition if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating Permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee, before the Permit is issued, are deferred for good cause until after permit issuance. Compliance schedules included in the Part B Permit Application should be attached to the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity and one identifying the milestone or completion dates. The following is an example of a condition that may apply for incineration units.]

The Permittee shall provide the following information to the Regional Administrator:

Item	Date Due to the Regional Administrator
[Example:	
1. Documentation that thermocouple No. TC 2 was installed as shown on Drawing No. 960, dated March 18, 1987	May 12, 1989
2. As-built construction drawings for installation of Pressure Sensor No. PS 4	February 13, 1989]

PERMIT ATTACHMENTS REFERENCED IN MODULE IX(A) - INCINERATION

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-1	Waste Analysis Plan
II-3	Facility Inspection Schedule
II-9	Closure Plan
IX(A)-1	List of Allowable Wastes
IX(A)-2	Design Plans and Specifications, and Maintenance Procedures
IX(A)-3	Description of Allowable Variations in System Design
IX(A)-4	Description of Procedures for Controlling Fugitive Emissions
IX(A)-5	Description of Monitoring Systems
IX(A)-6	Description of Automatic Waste Feed Cut-Off Systems
IX(A)-7	Description of Manual Waste Feed Cut-Off Systems

MODULE IX(B) - SHORT-TERM TEST INCINERATION

[Note: This permit module is applicable to facilities that perform a trial burn and presents conditions that, during the periods specified, supersede certain conditions found in Permit Module IX(A). 40 CFR 270.62 and 264.344(c) requires that a permit establish conditions necessary to meet the requirements of 40 CFR 264.345 during the shakedown, trial burn, and post trial burn periods.]

[Note: The purpose of this module is to provide permit conditions for the operation of a new incineration unit prior to the long-term operation period in order to:

1. Determine operational readiness following completion of physical construction;
2. Test compliance with the performance standards;
3. Determine adequate operating conditions to ensure that the performance standards will be maintained; and
4. Control operating conditions after the trial burn and prior to any final modifications of the operating conditions in the long-term portion of the permit to reflect the results of the trial burn.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

IX(B).A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion may include some or all of the following information: type of incineration system; types of air pollution control equipment used; system capacity in terms of either heat rate or mass flow rate; key operating conditions, such as combustion temperature (and whether these conditions were based on trial burn results, or data in lieu of a trial burn); a general description of the automatic waste feed cut-off system; the types of waste that may be burned; the principal organic hazardous constituents selected and the rationale for this selection; any unique or special features associated with the operation; and a reference to any special permit conditions.]

IX(B).B. SHAKEDOWN PHASE

During the shakedown phase (the period beginning with the initial introduction of hazardous wastes into the incinerator and ending with the start of the trial burn) the Permittee shall comply with the following conditions:

IX(B).B.1. DURATION OF THE SHAKEDOWN PHASE

The shakedown phase shall not exceed ___ hours of operation when burning hazardous wastes. [40 CFR 264.344(c)(1)]

[Note: The duration of the first shakedown phase cannot exceed 720 hours. The Permittee may petition the Agency for one extension of the shakedown phase for up to 720 additional hours. The Agency may grant the extension when good cause is demonstrated in the petition. The Permit Writer should modify the Permit as necessary to reflect the extension. The modifications may be considered minor modifications. The Permit Writer's justification for granting an extension should be included in the Administrative Record for this Permit.] [40 CFR 264.344(c)(1) and 40 CFR 270.62(a)]

IX(B).B.2. ALLOWABLE WASTE FEED

During the shakedown phase, the Permittee may feed only the following wastes to the incinerator, at the following feed rates, and subject to the requirements of Permit Conditions IX(B).B.3.:

[Note: The Permit Writer should identify which waste feeds the Permittee is allowed to incinerate during the shakedown phase and specify their respective feed rates. Any limitations to these waste feeds should also be specified. In some cases, an incinerator may accept only wastes that are always chemically and physically uniform. Identification may then simply be the process name of the waste or some other equivalent identifier. Other facilities may accept waste feeds whose chemical and physical properties vary. Any limitations, and the allowable range of variations for these waste feeds should be specified. Determining these conditions must be based on the Permit Writer's judgment that the facility will meet the performance standards of 40 CFR 264.343. The Permit Writer may choose to limit the waste feed to easily incinerable materials during this period, or to limit the amount of harder to incinerate waste that can be burned during this period. The options presented in Permit Condition IX(A).B. of the module for long-term incineration [Module IX(A)] should be considered by the Permit Writer.]

IX(B).B.3. INSTRUMENTATION AND OPERATIONAL PERFORMANCE REQUIREMENTS

[Note: For each of the waste feed streams specified in Permit Condition IX(B).B.2., the Permit Writer must establish operating conditions that, in the Permit Writer's judgment, ensure compliance with the performance standards of 40 CFR 264.343.]

[Note: 40 CFR 264.345(b)(1)-(4) requires the Permit Writer to establish operating limits for carbon monoxide, waste-feed rate, combustion temperature, and a combustion gas velocity indicator. Permit Conditions IX(B).B.2. and IX(B).B.3.a. through IX(B).B.3.c. cover those requirements. 40 CFR 264.345(b)(6) requires the Permit Writer to establish any other operating requirements (conditions) necessary to ensure compliance with the performance standards. Permit Conditions IX(B).B.3.d. through IX(B).B.3.n. are example permit conditions that serve this purpose. These permit conditions incorporate the list of key operating parameters provided by the EPA Guidance on Trial Burn Reporting and Setting Permit Conditions. This guidance should be consulted for assistance in determining which of these conditions apply for a specific facility and the specific method of setting each condition, given the design and operation of the facility or from data submitted in lieu of a trial burn.]

During the shakedown phase, the Permittee shall feed the wastes described in Permit Condition IX(B).B.2. to the incinerator only under the following conditions:

IX(B).B.3.a. Carbon monoxide concentration in the stack exhaust gas, monitored as specified in Permit Condition IX(B).B.5., and corrected for the amount of oxygen in the stack gas, shall not exceed ____ ppm over a one hour rolling average [or under the alternative format for CO limits, ___ ppm at any time, or ___ ppm for more than ____ minutes in any clock hour].

IX(B).B.3.b. Combustion temperature, monitored as specified in Permit Condition IX(B).B.5., shall be maintained at ___ °F (or °C) or greater.

[Note: For dual-chamber incinerators, minimum temperature should be set for each chamber.]

IX(B).B.3.c. Combustion gas velocity, monitored as specified in Permit Condition IX(B).B.5., shall be no greater than ___ ft/s.

IX(B).B.3.d. Atomization fluid pressure (e.g., steam, air) shall be no less than _____ psig.

IX(B).B.3.e. The turndown ratio for the waste burner shall be no greater than _____.

[Note: Permit Conditions IX(B).B.3.f. through IX(B).B.3.h. relate to ensuring compliance with the HCl emission standard in 40 CFR 264.343(b). The Permit Writer must determine which conditions are appropriate for a specific facility depending on the control devices present.]

IX(B).B.3.f. The $\frac{L}{G}$ ratio to the absorber, monitored as specified in Permit Condition IX(B).B.5., shall be maintained at no less than ___ [sometimes expressed as gals per thousand cubic feet though usually dimensionless].

IX(B).B.3.g. The scrubber effluent pH, monitored as specified in Permit Condition IX(B).B.5., shall be maintained at a minimum pH of ___.

IX(B).B.3.h. The scrubber water delivery (nozzle) pressure, monitored as specified in Permit Condition IX(B).B.5., shall be maintained at no less than ___ psig.

[Note: Permit Conditions IX(B).B.3.i. through IX(B).B.3.n. relate to ensuring compliance with the particulate emission standard in 40 CFR 264.343(c). Note, however, that most facilities will not have all of the devices mentioned. The Permit Writer must determine which conditions are appropriate for a specific facility.]

IX(B).B.3.i. Pressure drop across the venturi scrubber, monitored as specified in Permit Condition IX(B).B.5., shall be maintained at no less than ___ psi.

IX(B).B.3.j. The scrubber blowdown rate shall be maintained at no less than _____ gpm.

IX(B).B.3.k. The power to the electrostatic precipitator, monitored as specified in Permit Condition IX(B).B.5., shall be maintained at no less than ___ kVA.

IX(B).B.3.l. The voltage applied to the ionizing wet scrubber, monitored as specified in Permit Condition IX(B).B.5., shall be no less than _____ kV.

IX(B).B.3.m. Pressure drop across the baghouse, monitored as specified in Permit Condition IX(B).B.5., shall be no less than ___ psi, nor greater than ____ psi.

[Note: The Permit Writer may require the Permittee to specify in the Contingency Plan, provisions for maintaining and replacing bags.]

IX(B).B.3.n. The Permittee shall control fugitive emissions from the combustion zone of the incinerator by maintaining the pressure in the primary combustion chamber, monitored as specified in Permit Condition IX(B).B.5., to not exceed _____ inches of mercury. [40 CFR 264.345(d)]

[Note: The Permit Writer may specify another method for controlling fugitive emissions. The method must be demonstrated in the Part B Permit Application; this information should be attached to the Permit, Permit Attachment IX(B)-1, and referenced.]

IX(B).B.3.o. Compliance with the operating conditions specified in Permit Conditions IX(B).B.3.a. through IX(B).B.3.n. will be regarded as compliance with the required performance standards 40 CFR 264.343. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, may justify modification, revocation, or reissuance of the Permit pursuant to 40 CFR 270.41. [40 CFR 264.343(d)]

[Note: It must be understood, by both the Permit Writer and Permittee, that violation of the permit operating conditions can give rise to an enforcement action. If the Permittee complies with the permit operating conditions, but it is later shown that the performance standards are not being achieved, the permit may be modified or revoke and reissued, but enforcement actions are not available. Thus, each set of operating conditions should directly relate to achieving the performance standards in 40 CFR 264.343.]

IX(B).B.4. INSPECTION REQUIREMENTS

The Permittee shall inspect the incineration unit in accordance with the Inspection Schedule, Permit Attachment II-3, and shall complete the following as part of these inspections:

IX(B).B.4.a. The Permittee shall thoroughly, visually inspect the incinerator and associated equipment (including pumps, valves, conveyors, pipes, etc.) for leaks, spills, fugitive emissions, and signs of tampering. [40 CFR 264.347(b)]

IX(B).B.4.b. The Permittee shall thoroughly, visually inspect the instrumentation for out-of-tolerance monitored and/or recorded operational data.

IX(B).B.4.c. The Permittee shall test the emergency waste feed cut-off system and associated alarm at least weekly to verify operability, as specified in Permit Condition IX(B).B.5. [40 CFR 264.347(c)]

[Note: If the Permittee demonstrates to the Regional Administrator that the weekly inspections referred to in Permit Condition IX(B).B.4.c. will unduly restrict or upset operations and that less frequent inspection will be adequate, the Permit Writer should specify that inspection frequency in the permit condition. At a minimum, operational testing must be conducted at least monthly.]

IX(B).B.5. MONITORING REQUIREMENTS

IX(B).B.5.a. The Permittee shall maintain, calibrate, and operate monitoring equipment and record the data while incinerating hazardous waste, as specified below:

System Parameter	Monitor Type, Instr. No.	Location	Recording Process	Calibration Frequency
Examples (1) Combustion temperature	Type K Thermocouple TIC-900	[Use design drawing numbers to show the location]	[Indicate whether continuous or not]	[Frequency at which the unit is calibrated
(2) Pressure drop across scrubber venturi	Pressure Sensor PDIC-1220			

[Note: At a minimum, this condition must specify monitoring systems that meet the requirements of 40 CFR 264.347(a)(1) and (2). Permit Condition IX(B).B.5.a. contains example specifications for various operating parameters that must be monitored. Specific parameters should be addressed in the above table. If the Part B Permit Application contains the above information on monitoring practices, in a conveniently organized way and adequately detailed, then the Permit Writer may attach this information, Permit Attachment IX(B)-2, to the Permit instead of using a table in this permit module, and reference the attachment.]

IX(B).B.5.b. Upon request of the Agency, the Permittee shall perform sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the Permit achieve the performance standards. [40 CFR 264.347(a)(3)]

IX(B).B.6. WASTE FEED CUT-OFF REQUIREMENTS

IX(B).B.6.a. The Permittee shall construct and maintain the systems specified below to automatically cut off the hazardous waste feed to the incinerator at the levels specified below. Hazardous wastes shall be fed to the incinerator only when all instruments required by this condition are on line and operating properly.

Parameter	**Cut-Off Limits**	**Test Frequency**
Operating parameters to be inter-locked to automatic waste-feed cut off i.e., SCC temperature]	**[Level at which waste feed will be cut off]**	**[Frequency at which operational readiness is checked]**

[Note: 40 CFR 264.345(e) requires such systems to be constructed to ensure that the operating conditions specified in the Permit are not exceeded. Most cut-off systems are composed of multiple parameters. They include monitors for the operating conditions presented in Permit Condition IX(B).B.3. along with power failure and flame-out. If the Part B Permit Application adequately provides the above information regarding the automatic waste-feed cut-off system in an organized way and adequately detailed, then the Permit Writer may attach this information, Permit Attachment IX(B)-3, to the Permit, in lieu of using a table in this permit module, and reference the attachment.]

IX(B).B.6.b. In case of a malfunction of the automatic waste feed cut-off systems, the Permittee shall perform manual shut downs in accordance with the approved procedures in Permit Attachment IX(B)-4. The Permittee shall not restart the incinerator until the problem causing the malfunction has been located and corrected.

IX(B).B.7. RECORDKEEPING

IX(B).B.7.a. The Permittee shall record and maintain, in the operating record for this permit, all monitoring and inspection data compiled under the requirements of this Permit (see Permit Condition I.E.9.b.). [40 CFR 264.73 and 40 CFR 264.347(d)]

IX(B).B.7.b. The Permittee shall record in the operating record for this permit the date and time of all automatic waste feed shut-offs, including the triggering parameters, reason for the shut-off, and corrective actions taken. The Permittee shall also record all failures of the automatic waste feed shut-offs to function properly and corrective actions taken.

IX(B).B.8. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this condition if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating Permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee, before the Permit is issued, are deferred for good cause until after permit issuance. Compliance schedules included in the Part B Permit Application should be attached to the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity and one identifying the milestone or completion dates. The following is an example of a condition that may apply for incineration units.]

The Permittee shall provide the following information to the Regional Administrator:

[Example:

Item	Date Due to the Regional Administrator
1. Documentation that thermocouple No. TC 2 was installed as shown on Drawing No. 960, dated March 18, 1987	**May 12, 1989**
2. As-built construction drawings for installation of Pressure Sensor No. PS 4	**February 13, 1989]**

IX(B).C. TRIAL BURN PHASE

IX(B).C.1. CONFORMITY TO TRIAL BURN PLAN

The Permittee shall operate and monitor the incinerator during the trial burn phase as specified in the Trial Burn Plan, Permit Attachment IX(B)-5. The Trial Burn Plan shall be revised and resubmitted by the Permittee six (6) months prior to conducting the trial burn or a performance test required under Permit Condition IX(A).E.2. of this permit. The revised Trial Burn Plan must include all applicable EPA-approved test methods and procedures in effect at the time of the resubmittal.

[Note: The Trial Burn Plan must meet the requirements of 40 CFR 270.62(b)(2). The operating and monitoring requirements specified in the plan must be adequate to meet the requirements of 40 CFR 270.62(b)(2)(v). Additional conditions should be established, if necessary, to establish operating conditions which will ensure compliance with the performance standards of 40 CFR 264.343.]

IX(B).C.2. TRIAL POHCs

The principal organic hazardous constituents (POHCs) for which DREs must be determined are:

Waste Feed	POHC(s)

[Note: If the Permittee or Permit Writer wishes to establish different operating conditions for various hazardous waste feeds, then POHCs must be selected for each feed or feed group. For example, a facility may wish to designate two (2) waste feeds. Number one waste feed may be a combination of several waste streams that is relatively "easy" to burn based on its POHCs. Number two feed may consist of several waste streams that are "difficult" to burn based on their POHCs. The incinerator operating conditions for these two feeds may be different.]

[Note: Before selecting POHCs for the trial burn, the Permit Writer should review the EPA "Guidance Manual for Hazardous Waste Incinerator Permits" (SW-966), Guidance on Trial Burn Reporting and Setting Permit Conditions, and other appropriate guidances.]

IX(B).C.3. TRIAL BURN DETERMINATIONS

During the trial burn (or as soon after the trial burn as practicable), the Permittee shall make the determinations required by 40 CFR 270.62(b)(6)(i)-(ix).

[Note: Any other determinations that the Permit Writer finds will be needed to ensure that the trial burn will determine compliance with the performance standards should be described as required by 40 CFR 270.62(b)(6)(x).]

IX(B).C.4. TRIAL BURN DATA SUBMISSIONS AND CERTIFICATIONS

The Permittee shall submit a copy of all data collected during the trial burn to the Regional Administrator upon completion of the burn. The Permittee shall submit to the Regional Administrator the results of the determinations required by Condition IX(B).C.3 within ninety (90) days of the completion of the trial burn. All submissions must be certified in accordance with 40 CFR 270.11. [40 CFR 270.62(b)(7) and (9)]

[Note: The Regional Administrator may approve longer time periods for trial burn data submittal for good cause.] [40 CFR 270.62(b)(7)]

IX(B).D. POST-TRIAL BURN PHASE

During the post-trial burn phase (the period starting immediately following the completion of the trial burn and ending when the final operating permit is effective), and for the minimum period sufficient for the Permittee to analyze samples, compute data, and submit trial burn results, and for the Agency to review the trial burn results and make any modifications necessary to the Permit, the Permittee shall comply with the following conditions.

IX(B).D.1. ALLOWABLE WASTE FEED

During the shakedown phase, the Permittee may feed only the following wastes to the incinerator, at the following feed rates, and subject to the requirements of Permit Conditions IX(B).D.2.:

[Note: The Permit Writer should identify which waste feeds the Permittee is allowed to incinerate during the shakedown phase and specify their respective feed rates. Any limitations to these waste feeds should also be specified. In some cases, an incinerator may accept only wastes that are always chemically and physically uniform. Identification may then simply be the process name of the waste or some other equivalent identifier. Other facilities may accept waste feeds whose chemical and physical properties vary. Any limitations, and the allowable range of variations for these waste feeds should be specified. Determining these conditions must be based on the Permit Writer's judgment that the facility will meet the performance standards of 40 CFR 264.343. The Permit Writer may choose to limit the waste feed to easily incinerable materials during this period, or to limit the amount of harder to incinerate waste that can be burned during this period. The options presented in Permit Condition IX(A).B. of the module for long-term incineration [Module IX(A)] should be considered by the Permit Writer.]

IX(B).D.2. INSTRUMENTATION AND OPERATIONAL PERFORMANCE REQUIREMENTS

[Note: For each of the waste feed streams specified in Permit Condition IX(B).D.1., the Permit Writer must establish operating conditions that, in the Permit Writer's judgment, ensure compliance with the performance standards of 40 CFR 264.343.]

[Note: 40 CFR 264.345(b)(1)-(4) requires the Permit Writer to establish operating limits for carbon monoxide, waste-feed rate, combustion temperature, and a combustion gas velocity indicator. Permit Conditions IX(B).D.1. and IX(B).D.2.a. through IX(B).D.2.c. cover those requirements. 40 CFR 264.345(b)(6) requires the Permit Writer to establish any other operating requirements (conditions) necessary to ensure compliance with the performance standards. Permit Conditions IX(B).D.2.d. through IX(B).D.2.n. are example permit conditions that serve this purpose. These permit conditions incorporate the list of key operating parameters provided by the EPA Guidance on Trial Burn Reporting and Setting Permit Conditions. This guidance should be consulted for assistance in determining which of these conditions apply for a specific facility and the specific method of setting each condition, given the design and operation of the facility and the results of the trial burn or from data submitted in lieu of a trial burn.]

During the shakedown phase, the Permittee shall feed the wastes described in Permit Condition IX(B).D.1. to the incinerator only under the following conditions:

IX(B).D.2.a. Carbon monoxide concentration in the stack exhaust gas, monitored as specified in Permit Condition IX(B).D.4., and corrected for the amount of oxygen in the stack gas, shall not exceed ____ ppm over a one hour rolling average [or under the alternative format for CO limits, ___ ppm at any time, or ___ ppm for more than ____ minutes in any clock hour].

IX(B).D.2.b. Combustion temperature, monitored as specified in Permit Condition IX(B).D.4., shall be maintained at ___ °F (or °C) or greater.

[Note: For dual-chamber incinerators, minimum temperature should be set for each chamber.]

IX(B).D.2.c. Combustion gas velocity, monitored as specified in Permit Condition IX(B).D.4., shall be no greater than ___ ft/s.

IX(B).D.2.d. Atomization fluid pressure (e.g., steam, air) shall be no less than _____ psig.

IX(B).D.2.e. The turndown ratio for the waste burner shall be no greater than _____.

[Note: Permit Conditions IX(B).D.2.f. through IX(B).D.2.h. relate to ensuring compliance with the HCl emission standard in 40 CFR 264.343(b). The Permit Writer must determine which conditions are appropriate for a specific facility depending on the control devices present.]

IX(B).D.2.f. The $\frac{L}{G}$ ratio to the absorber, monitored as specified in Permit Condition IX(B).D.4., shall be maintained at no less than ___ **[sometimes expressed as gals per thousand cubic feet though usually dimensionless]**.

IX(B).D.2.g. The scrubber effluent pH, monitored as specified in Permit Condition IX(B).D.4., shall be maintained at a minimum pH of ___.

IX(B).D.2.h. The scrubber water delivery (nozzle) pressure, monitored as specified in Permit Condition IX(B).D.4., shall be maintained at no less than ___ psig.

[Note: Permit Conditions IX(B).D.2.i. through IX(B).D.2.n. relate to ensuring compliance with the particulate emission standard in 40 CFR 264.343(c). Note, however, that most facilities will not have all of the devices mentioned. The Permit Writer must determine which conditions are appropriate for a specific facility.]

IX(B).D.2.i. Pressure drop across the venturi scrubber, monitored as specified in Permit Condition IX(B).D.4., shall be maintained at no less than ___ psi.

IX(B).D.2.j. The scrubber blowdown rate shall be maintained at no less than _____ gpm.

IX(B).D.2.k. The power to the electrostatic precipitator, monitored as specified in Permit Condition IX(B).D.4., shall be maintained at no less than ___ kVA.

IX(B).D.2.l. The voltage applied to the ionizing wet scrubber, monitored as specified in Permit Condition IX(B).D.4., shall be no less than _____ kV.

IX(B).D.2.m. Pressure drop across the baghouse, monitored as specified in Permit Condition IX(B).D.4., shall be no less than ___ psi, nor greater than ____ psi.

[Note: The Permit Writer may require the Permittee to specify in the Contingency Plan, provisions for maintaining and replacing bags.]

IX(B).D.2.n. The Permittee shall control fugitive emissions from the combustion zone of the incinerator by maintaining the pressure in the primary combustion chamber, monitored as specified in Permit Condition IX(B).D.4., to not exceed _____ inches of mercury. [40 CFR 264.345(d)]

[Note: The Permit Writer may specify another method for controlling fugitive emissions. The method must be demonstrated in the Part B Permit Application; this information should be attached to the Permit, Permit Attachment IX(B)-1, and referenced.]

IX(B).D.2.o. Compliance with the operating conditions specified in Permit Conditions IX(B).D.2.a. through IX(B).D.2.n. will be regarded as compliance with the required performance standards 40 CFR 264.343. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, may justify modification, revocation, or reissuance of the Permit pursuant to 40 CFR 270.41. [40 CFR 264.343(d)]

[Note: It must be understood, by both the Permit Writer and Permittee, that violation of the permit operating conditions can give rise to an enforcement action. If the Permittee complies with the permit operating conditions, but it is later shown that the performance standards are not being achieved, the permit may be modified or revoke and reissued, but enforcement actions are not available. Thus, each set of operating conditions should directly relate to achieving the performance standards in 40 CFR 264.343.]

IX(B).D.3. INSPECTION REQUIREMENTS

The Permittee shall inspect the incineration unit in accordance with the Inspection Schedule, Permit Attachment II-3, and shall complete the following as part of these inspections:

IX(B).D.3.a. The Permittee shall thoroughly, visually inspect the incinerator and associated equipment (including pumps, valves, conveyors, pipes, etc.) for leaks, spills, fugitive emissions, and signs of tampering. [40 CFR 264.347(b)]

IX(B).D.3.b. The Permittee shall thoroughly, visually inspect the instrumentation for out-of-tolerance monitored and/or recorded operational data.

IX(B).D.3.c. The Permittee shall test the emergency waste feed cut-off system and associated alarm at least weekly to verify operability, as specified in Permit Condition IX(B).D.4. [40 CFR 264.347(c)]

[Note: If the Permittee demonstrates to the Regional Administrator that the weekly inspections referred to in Permit Condition IX(B).D.3.c. will unduly restrict or upset operations and that less frequent inspection will be adequate, the Permit Writer should specify that inspection frequency in the permit condition. At a minimum, operational testing must be conducted at least monthly.]

IX(B).D.4. MONITORING REQUIREMENTS

IX(B).D.4.a. The Permittee shall maintain, calibrate, and operate monitoring equipment and record the data while incinerating hazardous waste, as specified below:

System Parameter	Monitor Type, Instr. No.	Location	Recording Process	Calibration Frequency
Examples **(1) Combustion temperature**	**Type K Thermocouple TIC-900**	**[Use design drawing numbers to show the location]**	**[Indicate whether continuous or not]**	**[Frequency at which the unit is calibrated**
(2) Pressure drop across scrubber venturi	**Pressure Sensor PDIC-1220**			

[Note: At a minimum, this condition must specify monitoring systems that meet the requirements of 40 CFR 264.347(a)(1) and (2). Permit Condition IX(B).D.4.a. contains example specifications for various operating parameters that must be monitored. Specific parameters should be addressed in the above table. If the Part B Permit Application contains the above information on monitoring practices, in a conveniently

organized way and adequately detailed, then the Permit Writer may attach this information, Permit Attachment IX(B)-2, to the Permit instead of using a table in this permit module, and reference the attachment.]

IX(B).D.4.b. Upon request of the Agency, the Permittee shall perform sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the Permit achieve the performance standards. [40 CFR 264.347(a)(3)]

IX(B).D.5. WASTE FEED CUT-OFF REQUIREMENTS

IX(B).D.5.a. The Permittee shall construct and maintain the systems specified below to automatically cut off the hazardous waste feed to the incinerator at the levels specified below. Hazardous wastes shall be fed to the incinerator only when all instruments required by this condition are on line and operating properly.

Parameter	Cut-Off Limits	Test Frequency
Operating parameters to be interlocked to automatic waste-feed cut off i.e., SCC temperature]	**[Level at which waste feed will be cut off]**	**[Frequency at which operational readiness is checked]**

[Note: 40 CFR 264.345(e) requires such systems to be constructed to ensure that the operating conditions specified in the Permit are not exceeded. Most cut-off systems are composed of multiple parameters. They include monitors for the operating conditions presented in Permit Condition IX(B).D.2. along with power failure and flame-out. If the Part B Permit Application adequately provides the above information regarding the automatic waste-feed cut-off system in an organized way and adequately detailed, then the Permit Writer may attach this information, Permit Attachment IX(B)-3, to the Permit, in lieu of using a table in this permit module, and reference the attachment.]

IX(B).D.5.b. In case of a malfunction of the automatic waste feed cut-off systems, the Permittee shall perform manual shut downs in accordance with the approved procedures in Permit Attachment IX(B)-4. The Permittee shall not restart the incinerator until the problem causing the malfunction has been located and corrected.

IX(B).D.6. RECORDKEEPING

IX(B).D.6.a. The Permittee shall record and maintain, in the operating record for this permit, all monitoring and inspection data compiled under the requirements of this Permit (see Permit Condition I.E.9.b.). [40 CFR 264.73 and 40 CFR 264.347(d)]

IX(B).D.6.b. The Permittee shall record in the operating record for this permit the date and time of all automatic waste feed shut-offs, including the triggering parameters, reason for the shut-off, and corrective actions taken. The Permittee shall also record all failures of the automatic waste feed shut-offs to function properly and corrective actions taken.

IX(B).D.7. COMPLIANCE SCHEDULE

[Note: The Permit Writer should include this condition if the Permittee is required to complete specific steps within a specific time period, beyond those covered by other conditions of the Permit, as a criteria for retaining this operating Permit. Compliance schedules are generally used in cases where requirements that are supposed to be met by the Permittee, before the Permit is issued, are deferred for good cause until after permit issuance. Compliance schedules included in the Part B Permit Application should be attached to the Permit. If the application does not include a compliance schedule, the Permit Writer should prepare one and attach it to the Permit. Each compliance schedule should have at least two columns - one identifying the activity and one identifying the milestone or completion dates. The following is an example of a condition that may apply for incineration units.]

The Permittee shall provide the following information to the Regional Administrator:

Item	Date Due to the Regional Administrator
[Example:	
1. Documentation that thermocouple No. TC 2 was installed as shown on Drawing No. 960, dated March 18, 1987	May 12, 1989
2. As-built construction drawings for installation of Pressure Sensor No. PS 4	February 13, 1989]

IX(B).E. REPORTING NON-COMPLIANCE DURING THE TRIAL BURN

If based upon the analytical results of the trial burn and before submitting the required trial burn results, the Permittee determines that the incinerator failed to achieve any of the performance standards specified in 40 CFR 264.343, the Permittee shall notify the Regional Administrator within twenty-four (24) hours of making the determination. Upon the request of the Regional Administrator, the Permittee shall cease feeding hazardous waste to the incinerator. The Permittee may apply to the Regional Administrator for a permit modification pursuant to 40 CFR 270.41 and for a new trial burn pursuant to 40 CFR 270.62(b).

PERMIT ATTACHMENTS REFERENCED IN MODULE IX(B) - SHORT-TERM TEST INCINERATION

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-3	Facility Inspection Schedule
IX(B)-1	Description of Procedures for Controlling Fugitive Emissions
IX(B)-2	Description of Monitoring Systems
IX(B)-3	Description of Automatic Waste Feed Cut-Off Systems
IX(B)-4	Description of Manual Waste Feed Cut-Off Systems
IX(B)-5	Trial Burn Plan

MODULE X - GROUND-WATER DETECTION MONITORING

[Note: This permit module contains conditions that apply to storage, treatment, or disposal of hazardous wastes in any of the following units: surface impoundments, waste piles, land treatment units or landfills. These units require ground-water monitoring unless exempted under 40 CFR 264.90(b).] The goal of detection monitoring is to ensure the earliest possible detection of contaminant leakage from the regulated units. Detection monitoring requires detected leakage to be characterized and determines if further action is warranted. Detection monitoring entails the following:

1. Development of a list of ground-water indicator parameters and monitoring constituents used to indicate a release from the regulated unit(s).
2. Establishment of sampling and statistical analysis requirements to determine if a release has occurred.
3. Establishment of additional requirements if a statistically significant release occurs.]

[Note: On July 9, 1987, a federal rule was finalized to require analysis for 40 CFR 261, Appendix IX, rather than Appendix VIII, hazardous constituents pursuant to 40 CFR 264.98 and 264.99, if a statistically significant increase occurs for any detection monitoring parameters or constituents. The Appendix IX list is an abbreviated Appendix VIII list with several constituents added. This permit module incorporates the new rule.]

[Note: Under 40 CFR 264.91(b) the Regional Administrator may include one or more of the following programs in a permit: (1) detection monitoring (Module X), (2) compliance monitoring (Module XI), and (3) corrective action [Module XII(A)]. If more than one program is included in the Permit, the Permit Writer is to specify the circumstances or conditions under which each program will be required. It is possible that more than one program will be operable at the same time at a facility, or that the programs will be conditional based on a sequence of events. For example, the sequence set up in the Permit could include a detection monitoring program that triggers an Appendix IX analysis that triggers a Permittee option to apply for a variance (e.g., other contamination source or sampling error) and if the Permittee fails to seek or fails to obtain a variance, then compliance monitoring is triggered. The Permit could also set the ground water protection standard, with a provision for the Permittee to apply for an Alternate Concentration Limit (ACL), and in the absence of an ACL application or denial of an ACL, or exceedence of an ACL or pre-set limit, the triggering of the corrective action program. The corrective action program could include plume assessment, corrective measures study and design, and implementation of corrective action. Setting up such a sequence in the Permit reduces the number of permit modifications that may be needed and decreases the administrative time needed to get on with subsequent steps in the process and ultimately, the time required to get corrective action under way, if needed.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

X.A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information: description of the waste management units (including type and number that require detection monitoring); number, location and depth of wells; which wells are upgradient and downgradient; the indicator parameters and monitoring constituents specified and their background concentrations; any unique or special features associated with the operation; and a reference to any special permit conditions.]

X.B. WELL LOCATION, INSTALLATION AND CONSTRUCTION

[Note: For specific Agency guidance on monitoring well design and construction, hydrogeologic site characterization and location of monitoring wells, consult the EPA RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (September 1986).]

The Permittee shall install and maintain a ground-water monitoring system as specified below: [40 CFR 264.97]

X.B.1. The Permittee shall (install and) maintain ground-water monitoring wells at the locations specified on the map in Permit Attachment X-1 and in conformance with the following list:

[Note: The map must show all monitoring well locations and provide unique identifiers for each well. The number and location of monitoring wells utilized for ground-water monitoring is site-specific. The number and location of the wells must meet the requirements of 40 CFR 264.95 (Point of Compliance) and 40 CFR 264.97(a) and (b), if applicable (number, location, and depth of wells). The ground-water monitoring system must: yield samples in upgradient wells that represent the quality of the background ground water unaffected by leakage from any regulated unit(s), and in downgradient wells yield samples that represent the quality of water passing the point of compliance. The number and location of monitoring wells must be sufficient to identify and define all logical release pathways from the regulated units based on site-specific hydrogeologic characterization. The Permit

Writer may require the Permittee to selectively monitor a hydrologic zone which the Permittee has not described as part of the uppermost aquifer (e.g., perched water table), if based on hydrogeological characteristics, the hydrologic zone is an area of concern for the migration of hazardous constituents from regulated units that can be transported to any exposure point.]

X.B.2. The Permittee shall (construct and) maintain the monitoring wells identified in Permit Condition X.B.1., in accordance with the detailed plans and specifications presented in Permit Attachment X-2.

[Note: The plans and specifications must meet the requirements of 40 CFR 264.97(a) and (c), and should consist of design drawings and design criteria applicable to all wells, and individual well specifications identifying total well depth and location of screened intervals.]

[Note: If determined to be necessary to protect human health or the environment, the Permit Writer should include Permit Condition X.B.3., specifications on how monitoring wells are plugged and abandoned. HSWA Section 212 provides EPA with this authority. Several states also have regulations which cover monitoring well abandonment.]

X.B.3. All wells deleted from the monitoring program shall be plugged and abandoned in accordance with Permit Attachment X-3. Well plugging and abandonment methods and certification shall be submitted to the Regional Administrator within **[The Permit Writer should specify the submittal period.]** from the date the wells are removed from the monitoring program.

X.C. INDICATOR PARAMETERS AND MONITORING CONSTITUENTS

[Note: The Permit Writer may use background data from interim status monitoring to establish background concentrations for detection monitoring, to the extent that the same parameters continue to be used in detection.]

X.C.1. The Permittee shall monitor **[The Permit Writer should specify the well numbers]**, as described in Permit Condition X.B., for the following parameters and constituents: [40 CFR 264.98(a)]

Parameter or Constituent	Established Background Concentrations

[Note: The Permit Writer should develop a list of detection monitoring parameters and constituents using the following information: waste analysis plan, waste characterization, site hydrogeologic characterization, and proposed monitoring parameters and constituents.]

[Note: Include Permit Condition X.C.2. when the Permittee has not established background values at the time the Permit is issued in accordance with 40 CFR 264.97(g).]

X.C.2. For those parameters and constituents in Permit Condition X.C.1. for which no background values are established at the time the Permit is issued, the Permittee shall establish background values in accordance with the following procedures. **[The Permit Writer should specify that the procedures in Permit Conditions X.C.2.a. and X.C.2.b. be used to establish the background values.]** [40 CFR 264.97(g)(1)]

X.C.2.a. Background ground-water quality for a monitoring parameter or constituent shall be based on data from quarterly sampling of the well [or wells] upgradient from the waste management unit for one (1) year. [40 CFR 264.97(g)(1)]

[Note: The Permit Writer may allow the determination of background quality based on samples from wells that are not upgradient from the waste management area if: (i) hydrogeologic conditions do not allow the Permittee to determine which wells are upgradient; or (ii) sampling at other wells will provide an indication of background ground-water quality that is as representative, or more representative, than that provided by the upgradient wells.] [40 CFR 264.97(g)(3)]

X.C.2.b. The Permittee shall take a minimum of one sample from each well and a minimum of four samples from the entire system used, to determine background ground-water quality for each parameter and/or constituent each time the system is sampled. [40 CFR 264.97(g)(4)] **[Note: These samples are required for the development of the data base for the entire monitoring system. The Permit Writer can require the collection of additional samples. At least one sample should be collected from each monitoring well every quarter. At the end of one year, a minimum of sixteen samples must be obtained from which the background ground-water quality will be established.]**

X.D. SAMPLING AND ANALYSIS PROCEDURES

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the ground-water monitoring wells described in Permit Condition X.B.: [40 CFR 264.97(d) and (e)]

X.D.1. Samples shall be collected using the techniques described in Permit Attachment X-4.

X.D.2. Samples shall be preserved **[and shipped (when shipped off site for analysis)]**, in accordance with the procedures specified in Permit Attachment X-4.

X.D.3. Samples shall be analyzed in accordance with the procedures specified in Permit Attachment X-4.

X.D.4. Samples shall be tracked and controlled using the chain-of-custody procedures specified in Permit Attachment X-4.

[Note: The Permittee must submit all of the above information, which is required under 40 CFR 264.97(d) and (e), 264.98(g) and 270.14(c)(7)(vi).]

[Note: The sampling and analytical procedures must be designed to provide a reliable indication of the quality of the ground water below the facility, pursuant to 40 CFR 264.97(d) and (e).]

X.E. ELEVATION OF THE GROUND-WATER SURFACE

X.E.1. The Permittee shall determine the elevation of the ground-water surface at each well each time the ground water is sampled, in accordance with Permit Condition X.G.2. [40 CFR 264.97(f)]

[Note: The Permit Writer should include Permit Condition X.E.2. if new monitoring wells are installed. The surveyed ground surface elevation of all existing monitoring wells is required on the facility map in the Part B Permit Application.]

X.E.2. The Permittee shall record the surveyed elevation of the monitoring well(s) when installed (with as-built drawings). **[Note: The total depth of the well and the elevations of the following should be recorded: top of casing, ground surface and/or apron elevation, and the protective casing.]**

X.F. STATISTICAL PROCEDURES

[Note: 40 CFR 264, Subpart F regulations were undergoing revisions at the time this permit module was prepared. The new regulations will specify six performance standards that the statistical methods and sampling procedures must meet. The statistical procedures in this permit module are based on 40 CFR 264, Subpart F, July, 1987.]

When evaluating the monitoring results in accordance with Permit Condition X.G., the Permittee shall use the following procedures:

X.F.1. When a constituent's background value has a sample coefficient of variation less than 1.00, the Permittee shall conduct the following statistical procedures:

The Permittee shall take [at least] four portions from a sample at each well, at the compliance point, and determine whether the difference between the mean of the constituent at each well (using all portions taken) and the background value for the constituent is significant, at the 0.05 level, using the Cochran's Approximation to the Behrens-Fisher Student's t-test, as described in Permit Attachment G.W.2 to this permit module. If the test indicates that the difference is significant, the Permittee shall repeat the same procedure (with at least the same number of portions as used in the first test) with a fresh sample from the monitoring well. If this second round of analysis indicates that the difference is significant, the Permittee shall conclude that a statistically significant change has occurred. [40 CFR 264.97(h)(1)(i)]

[Note: As an alternative to the above condition, the Permittee may use an equivalent statistical procedure for determining whether a statistically significant change has occurred. The Permit Writer may specify such a procedure in the Permit if the alternative procedure reasonably balances the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit, in a manner that is comparable to that of the statistical procedure described in Permit Condition X.F.1.] [40 CFR 264.97(h)(1)(ii)]

X.F.2. **The Permittee shall conduct the statistical procedures as presented in Permit Attachment X-5 .**

[Note: In all other situations in a detection monitoring program, the Permittee must use a statistical procedure providing reasonable confidence that the migration of hazardous constituents from a regulated unit into and

through the aquifer will be indicated. The Permit Writer must specify a statistical procedure in the Permit that:

- Is appropriate for the distribution of the data used to establish background values or concentration limits and

- Provides a reasonable balance between the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit.] [40 CFR 264.97(h)(2)(i) and (ii)]

X.G. MONITORING PROGRAM AND DATA EVALUATION

X.G.1. The Permittee shall collect, preserve, and analyze samples pursuant to Permit Condition X.D.

X.G.2. The Permittee shall determine ground-water quality at each monitoring well at the compliance point [Note: The Permit Writer should specify the sampling frequency, but must require these determinations at least semi-annually. Some state agencies require quarterly determinations.] during the active life of a regulated unit, including the closure period (and post-closure care period for land disposal units which do not clean close). [40 CFR 264.98(d)] The Permittee shall express the ground-water quality at each monitoring well in a form necessary for the determination of statistically significant increases (i.e., means and variances). [40 CFR 264.97(h)]

X.G.3. The Permittee shall determine the ground-water flow rate and direction in the uppermost aquifer at least annually. [40 CFR 264.98(e)]

X.G.4. The Permittee shall determine whether there is a statistically significant increase over the background values for each parameter identified in Permit Condition X.C.1. each time ground-water quality is determined at the compliance point. In determining whether such an increase has occurred, the Permittee must compare the ground-water quality at each monitoring well specified in Permit Condition X.B.1. to the background value specified in Permit Condition X.C.1., in accordance with the statistical procedures specified in Permit Condition X.F. [40 CFR 264.98(g)]

X.G.5. The Permittee shall perform the evaluations described in Permit Condition X.G.4. within [Note: The Permit Writer should specify the number of days. The report time required by the Permit Writer should take into consideration the availability of laboratory services to the Permittee and the type of statistical analysis employed by the Permittee.] after completion of sampling. [40 CFR 264.98(g)(2)]

X.H. RECORDKEEPING AND REPORTING

X.H.1. The Permittee shall enter all monitoring, testing, and analytical data obtained in accordance with Permit Condition X.G. in the operating record. [40 CFR 264.73(b)(6)] The data must include all computations, calculated means, variances, t-statistic values, and t-test results (or results of statistical tests that the Regional Administrator has determined to be equivalent).

[Note: The Permit Writer should include Permit Condition X.H.2. if background values were not established prior to permit issuance. The Permit Writer should specify when the year-long quarterly sample analyses and computations for background values must be submitted if they were not included or acceptable in the Part B Permit Application.]

X.H.2. The established background values and the computations necessary to determine background values must be submitted to the Regional Administrator.

[Note: The regulations do not require the Permittee to routinely submit all the ground-water sampling analytical results, statistical evaluations or results of the annual determination of the ground-water flow rate and direction. Such information is required to be submitted when there are significant changes in hazardous constituent concentrations or there are changes in the ground-water flow rate or direction which negate or adversely alter monitoring system effectiveness. The Permit Writer may require this "routine" information. Include Permit Condition X.H.2. if the facility is to submit the information on a regular basis.]

X.H.3. The Permittee shall submit the analytical results required by Permit Conditions X.G.2. and X.G.3. and the results of the initial statistical analyses required by Permit Condition X.G.4., in accordance with the following schedule: **[Note: The Permit Writer should specify the reporting schedule for ground-water sampling, the statistical determination of ground-water sampling, and the annual ground-water flow rate and direction determination.]**

[The following is an example of a Quarterly Reporting Schedule:

Samples to be Collected During the Preceding Months of	Results Due to the Regional Administrator By
January - February	April 15
April - May	July 15
July - August	October 15
October - November	January 15]

X.H.4. If the Permittee determines, pursuant to Permit Condition X.G., there is a statistically significant increase above the background values for the indicator parameters specified in Permit Condition X.C.1., the Permittee shall:

X.H.4.a. Notify the Agency in writing within seven days. [40 CFR 264.98(h)(1)]

X.H.4.b. Immediately sample the ground water in all wells and determine the concentration of all constituents identified in Appendix IX of 40 CFR 261. [40 CFR 264.98(h)(2)]

X.H.4.c. Establish the background values for each Appendix IX constituent found in the ground water. [40 CFR 264.98(h)(3)]

X.H.4.d. Within 90 days, submit to the Agency an application for a permit modification to establish a compliance monitoring program. [40 CFR 264.98(h)(4)] The application must include the following information:

X.H.4.d.1 An identification of the concentration of each Appendix IX constituent found in the ground water at each monitoring well at the compliance point. [40 CFR 264.98(4)(i)]

X.H.4.d.2 Any proposed changes to the ground-water monitoring system at the facility necessary to meet the requirements of compliance monitoring as described in 40 CFR 264.99. [40 CFR 264.98(h)(4)(ii)]

X.H.4.d.3 Any proposed changes to the monitoring frequency, sampling and analysis procedures, or methods or statistical procedures used at the facility necessary to meet the requirements of compliance monitoring as described in 40 CFR 264.99. [40 CFR 264.98(h)(4)(iii)]

X.H.4.d.4 For each hazardous constituent found at the compliance point, a proposed concentration limit, or a notice of intent to seek an alternate concentration limit for a hazardous constituent [40 CFR 264.98(h)(4)(iv)]

X.H.4.e. Submit a corrective action feasibility plan to the Agency within 180 days. [40 CFR 264.98(h)(5)]

X.H.5. If the Permittee determines, pursuant to Permit Condition X.G., there is a statistically significant increase above the background values for the parameters specified in Permit Condition X.C.1., he may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. In such cases, the Permittee shall:

X.H.5.a. Notify the Regional Administrator in writing within seven (7) days that he intends to make a demonstration. [40 CFR 264.98(i)(1)]

X.H.5.b. Within 90 days, submit a report to the Regional Administrator which demonstrates that a source other than a regulated unit caused the increase, or that the increase resulted from error in sampling, analysis, or evaluation. [40 CFR 264.98(i)(2)]

X.H.5.c. Within 90 days, submit to the Regional Administrator an application for a permit modification to make any appropriate changes to the detection monitoring program at the facility. [40 CFR 264.98(i)(3)]

X.H.5.d. Continue to monitor in accordance with the detection monitoring program at the facility. [40 CFR 264.98(i)(4)]

[Note: The Permittee need not submit a corrective action feasibility plan, in accordance with 40 CFR 264.98(h)(5)(ii), if the concentrations of all hazardous constituents identified under Permit Condition X.H.5.b. do not exceed the respective values listed in Table 1 of 40 CFR 264.94, or the Permittee has sought an ACL variance for every hazardous constituent identified under Permit Condition X.H.5.b.]

X.I. ASSURANCE OF COMPLIANCE

The Permittee shall assure the Regional Administrator that ground-water monitoring and corrective action measures necessary to achieve compliance with the ground-water protection standard under 40 CFR 264.92 are taken during the term of the Permit. [40 CFR 264.98(k)]

X.J. SPECIAL REQUIREMENTS IF SIGNIFICANT INCREASES OCCUR IN VALUES FOR PARAMETERS OR CONSTITUENTS

If the Permittee has determined a statistically significant increase over the background values for any of the parameters and/or constituents identified in Permit Condition X.C.1., in accordance with statistical procedures specified in Permit Condition X.F., the Permittee must:

X.J.1. Notify the Regional Administrator in writing, within seven (7) days. The notification must indicate what parameters or constituents have shown statistically significant increases. [40 CFR 264.98(h)(1)]

X.J.2. Immediately sample the ground water in all wells and determine the concentration of all constituents identified in Appendix IX of 40 CFR 261. [40 CFR 264.98(h)(2)]

X.J.3. Establish background values for each Appendix IX constituent found in the ground water. [40 CFR 264.98(h)(3)]

X.J.4. Within 90 days, submit to the Regional Administrator an application for a permit modification to establish a compliance monitoring program. [40 CFR 264.98(h)(4)]

X.J.5. Submit to the Regional Administrator a corrective action feasibility plan within 180 days. [40 CFR 264.98(h)(5)]

[Note: The Permittee need not submit a corrective action feasibility plan, in accordance with 40 CFR 264.98(h)(1)(ii), if the concentrations of all hazardous constituents identified under Permit Condition X.H.4.b. do not exceed the respective values listed in Table 1 of 40 CFR 264.94, or the Permittee has sought an ACL variance for every hazardous constituent identified under Permit Condition X.H.4.b.]

X.K. REQUEST FOR PERMIT MODIFICATION

If the Permittee or the Regional Administrator determines the detection monitoring program no longer satisfies the requirements of the regulations, the Permittee must, within 90 days of the determination, submit an application for a permit modification to make any appropriate changes to the program which will satisfy the regulations. [40 CFR 264.98(j)]

PERMIT ATTACHMENTS REFERENCED IN MODULE X - GROUND-WATER DETECTION MONITORING

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
G.W.1	Maximum Concentration of Constituents for Ground-Water Protection
G.W.2	Cochrans Approximation to the Behrens-Fisher Student's T-Test
X-1*	Facility map depicting the monitoring well locations and regulated units
X-2*	Plans and specifications for monitoring well construction, installation and maintenance
X-3*	Methodology for Monitoring Well Abandonment
X-4*	Sampling and Analysis Plan
X-5*	Alternative Statistical Procedures

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* These attachments are not part of the module. These attachments should be in the facility's Part B Permit or may, as in the case of Alternative Statistical Procedures, be supplied by the Regional Administrator.

September 1988

ATTACHMENT G.W.1
(to Module X - Ground-Water Detection Monitoring)

Maximum Concentration of Constituents for Ground-Water Protection

Constituent	Maximum concentration (Milligrams per liter)
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin (1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,9a-octahydro-1,4-endo, endo-5,8-dimethano naphthalene)	0.0002
Lindane (1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer)	0.004
Methoxychlor (1,1,1-Trichloro-2,2-bis (p-methoxyphenylethane)	0.1
Toxaphene ($C_{10}H_{10}Cl_6$, Technical chlorinated camphene, 67-69 percent chlorine)	0.005
2,4-D (2,4-Dichlorophenoxyacetic acid)	0.1
2,4,5-TP Silvex (2,4,5-Trichlorophenoxypropionic acid)	0.01

Source: 40 CFR 264.94, Table 1, July 1987.

ATTACHMENT G.W.2
(To Module X - Ground-Water Detection Monitoring)

COCHRAN'S APPROXIMATION TO THE BEHRENS-FISHER STUDENT'S T-TEST

Using all the available background data (n_b readings), calculate the background mean (X_B) and background variance (S_B^2). For the single monitoring well under investigation (n_m reading), calculate the monitoring mean (X_m) and monitoring variance (S_m^2).

For any set of data ($X_1, X_2 \ldots X_n$) the mean is calculated by:

$$\bar{X} = \frac{X_1+X_2+\ldots X_n}{n}$$

and the variance is calculated by:

$$S^2 = \frac{(X_1-\bar{X})^2 + (X_2-\bar{X})^2 \ldots + (X_n-\bar{X})^2}{n-1}$$

where "n" denotes the number of observations in the set of data.

The t-test uses these data summary measures to calculate a t-statistic (t^*) and a comparison t-statistic (t_c). The t^* value is compared to the t_c value and a conclusion reached as to whether there has been a statistically significant change in any indicator parameter.

The t-statistic for all parameters except pH and similar monitoring parameters is:

$$t^* = \frac{\bar{X}_m-\bar{X}_B}{\frac{S_m^2}{n_m} + \frac{S_B^2}{n_B}}$$

If the value of this t-statistic is negative then there is no significant difference between the monitoring data and background data. It should be noted that significantly small negative values may be indicative of a failure of the assumption made for test validity or errors have been made in collecting the background data.

The t-statistic (t_c), against which t^* will be compared, necessitates finding t_B and t_m from standard (one-tailed) tables where,

t_B-t-tables with (n_B-1) degrees of freedom, at the 0.05 level of significance.

t_m-t-tables with (n_m-1) degrees of freedom, at the 0.05 level of significance.

Finally, the special weightings W_b and W_m are defined as:

$$W_B = \frac{S_B^2}{n_B} \quad \text{and} \quad W_m = \frac{S_m^2}{n_m}$$

and so the comparison t-statistic is:

$$t_c = \frac{W_B t_B + W_m t_m}{W_B + W_m}$$

The t-statistic (t^*) is now compared with the comparison t-statistic (t_c) using the following decision-rule:

> If t^* is equal to or larger than t_c then conclude that there most likely has been a significant increase in this specific parameter.
>
> If t^* is less than t_c then conclude that most likely there has not been a change in this specific parameter.

The t-statistic for testing pH and similar monitoring parameters is constructed in the same manner as previously described except the negative sign (if any) is discarded and the caveat concerning the negative value is ignored. The standard (two-tailed) tables are used in the construction t_c for pH and similar monitoring parameters.

If t^* is equal to or larger than t_c, then conclude that there most likely has been a significant increase (if the initial t^* had been negative, this would imply a significant decrease). If t^* is less than t_c, then conclude that there most likely has been no change.

A further discussion of the test may be found in Statistical Methods (6th Edition, Section 4.14) by G. W. Snedecor and W. G. Cochran, or Principles and Procedures of Statistics (1st Edition, Section 5.8) by R. G. D. Steel and J. H. Torrie.

Standard T-Tables for a 0.05 Level of Significance

Degrees of Freedom	t-values (1-tail)	t-values (2-tail)
1	6.314	12.706
2	2.920	4.303
3	2.353	3.182
4	2.132	2.776
5	2.015	2.571
6	1.943	2.447
7	1.895	2.365
8	1.860	2.306
9	1.833	2.262
10	1.812	2.228
11	1.796	2.201
12	1.782	2.179
13	1.771	2.160
14	1.761	2.145
15	1.753	2.131
16	1.746	2.120
17	1.740	2.110
18	1.734	2.101
19	1.729	2.093
20	1.725	2.086
21	1.721	2.080
22	1.717	2.074
23	1.714	2.069
24	1.711	2.064
25	1.708	2.060
30	1.697	2.042
40	1.684	2.021

Adapted from Table III of "Statistical Tables for Biological Agricultural and Medical Research" (1947, R. A. Fisher and F. Yates).

[47 FR 32367, July 26, 1982]

MODULE XI - GROUND-WATER COMPLIANCE MONITORING

[Note: This module presents permit conditions addressing the regulatory requirements for ground-water compliance monitoring programs (40 CFR 264.91, 264.98, and 264.99). A compliance monitoring program must be established at the facility if the Permittee or the Regional Administrator determines there is a statistically significant increase in the concentration of hazardous constituents in the ground water at the point of compliance. This determination is the result of either an interim status assessment ground-water monitoring program [40 CFR 265.91] or a detection ground-water monitoring program [40 CFR 264.98]. Federal regulations 40 CFR 264.98(h)(4) and 270.14(c)(5) and (c)(7) require the applicant to submit detailed plans and engineering reports describing the proposed compliance monitoring program.]

[Note: The goal of compliance monitoring is to determine whether and when leakage of hazardous constituents into the ground water exceeds specified concentration limits. Compliance monitoring entails the following:

1. Development of a list of all 40 CFR 261, Appendix IX hazardous constituents present in the ground water which could have reasonably been derived from the facility;

2. Specification of a concentration limit for each hazardous constituent listed in the Permit;

3. Establishment of a ground-water protection standard at the compliance point; and

4. Establishment of the duration of the compliance period.]

[Note: On July 9, 1987, a federal rule was finalized to require analysis for 40 CFR 261, Appendix IX, rather than Appendix VIII, hazardous constituents pursuant to 40 CFR 264.98 and 264.99, (1) if a statistically significant increase occurs for any detection monitoring parameters or constituents, and (2) annually under compliance monitoring. The Appendix IX list is an abbreviated Appendix VIII list, with several constituents added. This permit module incorporates the new rule.]

[Note: Under 40 CFR 264.91(b) the Regional Administrator may include one or more of the following programs in a permit: (1) detection monitoring (Module X), (2) compliance monitoring (Module XI), and (3) corrective action [Module XII(A)]. If more than one program is included in the Permit, the Permit Writer is to specify the circumstances or conditions under which each program will be required. It is possible that more than one program will be operable at the same time at a facility, or that the programs will be conditional based on a sequence of events. For example, the sequence set up in the Permit could include a detection monitoring program that triggers an Appendix IX analysis that triggers a Permittee option to apply for a variance (e.g., other contamination source or sampling error) and if the Permittee fails to seek or fails to obtain a variance, then compliance monitoring is triggered. The Permit could also set the ground water protection standard, with a provision for the Permittee to apply for an Alternate Concentration Limit (ACL), and in the absence of an ACL application or denial of an ACL, or exceedence of an ACL or pre-set limit, the triggering of the corrective action program. The corrective action program could include plume assessment, corrective measures study and design, and implementation of corrective action. Setting up such a sequence in the Permit reduces the number of permit modifications that may be needed and decreases the administrative time needed to get on with subsequent steps in the process and ultimately, the time required to get corrective action under way, if needed.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

XI.A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should include the following information: description of the waste management units for which compliance monitoring is being conducted; number, location, and depth of wells; which wells are upgradient and downgradient; hazardous constituents and concentration limits; compliance period for each hazardous waste management unit; special features associated with the operation; and a reference to any special permit conditions.]

XI.B. WELL LOCATION, INSTALLATION AND CONSTRUCTION

[Note: For specific Agency guidance on monitoring well design and construction, hydrogeologic site characterization, and location of monitoring wells, the Permit Writer should consult the EPA RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (September 1986).]

The Permittee shall (install and) maintain a ground-water monitoring system, as specified below: [40 CFR 264.99(b)]

XI.B.1. The Permittee shall (install and) maintain ground-water monitoring wells at the locations specified on the map presented in Permit Attachment XI-1, and in conformance with the following list:

[Note: The map must show all monitoring well locations and provide identifiers for each well. The number and location of monitoring wells utilized for ground-water monitoring is site specific. The number and location of

the wells must meet the requirements of 40 CFR 264.95 (Point of Compliance) and 40 CFR 264.97(a) or (b) (number, location, and depth of wells). The ground-water monitoring system must: yield samples in upgradient wells that represent the quality of the background water unaffected by leakage from any regulated unit(s); and, in downgradient wells, yield samples that represent the quality of water passing the point of compliance. The number and location of monitoring wells must be sufficient to identify and define all potential release pathways from the regulated units based on site-specific hydrogeologic characterization. The Permit Writer may require the Permittee to selectively monitor a hydrologic zone that the Permittee has not described as part of the uppermost aquifer (e.g., perched water table); if based on hydrogeological characteristics, the hydrogeologic zone is an area of concern for the migration of hazardous constituents from regulated units that can be transported to any exposure point.]

XI.B.2. The Permittee shall (construct and) maintain the monitoring wells identified in Permit Condition XI.B.1., in accordance with the plans and specifications presented in Permit Attachment XI-2.

[Note: The plans and specifications in the Part B Permit Application must meet the requirements of 40 CFR 264.97(a) and (c). They should consist of design drawings and design criteria applicable to all wells and individual well specifications identifying depth and screened intervals.]

[Note: If determined to be necessary to protect human health or the environment, the Permit Writer may include Permit Condition XI.B.3., specifications on how monitoring wells are plugged and abandoned. HSWA Section 212 provides EPA with this authority. Several states have regulations which cover monitoring well abandonment.]

XI.B.3. All wells deleted from the monitoring program shall be plugged and abandoned in accordance with Permit Attachment XI-3. Well plugging and abandonment methods and certification shall be submitted to the Regional Administrator within **[The Permit Writer should specify the submittal period.]** from the date the wells are removed from the monitoring program.

XI.C. GROUND-WATER PROTECTION STANDARD

[Note: The Permit Writer must establish concentration limits for the constituents listed in this condition, pursuant to 40 CFR 264.94(a) to implement the ground-water protection standard. Concentration limits for hazardous constituents are established at each waste management area to determine the ground-water protection standard (GWPS) at the facility. There are four ways to determine the concentration limits in establishing the GWPS: (1) use of pooled background levels of the hazardous constituents determined from facility ground-water monitoring; (2) use of maximum constituent concentrations listed in Table 1, 40 CFR 264.94(a) - Permit Attachment G.W.1 to this module; (3) use of alternate concentration limits (ACLs) proposed by the Permittee; or (4) the concentration limits may be established at upgradient wells each time the ground water is sampled at the compliance point, if there is a high temporal correlation. The GWPS may be a combination of these four methods. For detailed information on ACLs, consult the EPA Alternate Concentration Limit Guidance (July 1987). The Permit Writer may incorporate the background concentrations of hazardous constituents from Table 1, 40 CFR 264.94(a), if background concentrations for these constituents have not been established at the facility.]

XI.C.1. The Permittee shall monitor the ground water to determine whether regulated units are in compliance with the ground-water protection standard under 40 CFR 264.92. The following hazardous constituents and their concentration limits comprise the ground-water protection standard: [40 CFR 264.93 and 94]

Hazardous Constituents	Concentration Limits

[Note: The Permit Writer should develop a list of hazardous constituents to establish initial compliance monitoring requirements using the following information submitted by the Permittee in the Part B Permit Application: waste analysis plan, waste characterization, site hydrogeologic characterization, Appendix IX ground-water sample analyses, and proposed monitoring constituents. In addition to the hazardous constituents, the Permit Writer may require the Permittee to monitor for ground-water quality indicator parameters.]

[Note: The concentration limits should be determined from the mean of pooled background data available for the concentrations of hazardous constituents at the time of permitting, from Table 1 in 40 CFR 264.94(a) or approved ACLs. The Permittee should include Permit Condition XI.C.2. if the Permittee has demonstrated a high temporal correlation between upgradient and compliance point hazardous constituents.] [40 CFR 264.99(c)(1)]

XI.C.2. The Permittee may establish the concentration limit by sampling the upgradient well(s) each time ground water is sampled at the compliance point. The concentration limit for the hazardous constituent(s) must be determined according to the following procedure:

[Note: the Permit Writer must specify the procedures used for determining the concentration limit in Permit Condition XI.C.2. The concentration limits may be determined by Permit Condition XI.C.2. only if the Permittee can demonstrate a high temporal correlation between upgradient and compliance point concentrations for hazardous constituents.]

XI.C.3. The Permittee shall monitor **[The Permit Writer should specify the well numbers to be monitored.]** at the point of compliance, as described in Permit Condition XI.B., and as designated in Permit Attachment XI-1. [40 CFR 264.95]

XI.C.4. The compliance period, during which the ground-water protection standard applies, is equal to _____ months (or years) **[The Permit Writer should specify the applicable time period. The compliance period shall begin at the time the Permittee begins the compliance monitoring program.]** [40 CFR 264.96(b)] If the Permittee is conducting corrective action at the end of the compliance period specified, then the compliance period shall be extended until the Permittee demonstrates that the ground-water protection standard has not been exceeded for three consecutive years. [40 CFR 264.96(c)]

XI.D. SAMPLING AND ANALYSIS PROCEDURES

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the ground-water monitoring wells described in Permit Condition XI.B.: [40 CFR 264.97(d) and (e)]

XI.D.1. Samples shall be collected using the techniques described in Permit Attachment XI-4.

XI.D.2. Samples shall be preserved **[and shipped (when shipped off site for analysis)]**, in accordance with the procedures specified in Permit Attachment XI-4 .

XI.D.3. Samples shall be analyzed in accordance with the procedures specified in Permit Attachment XI-4.

XI.D.4. Samples shall be tracked and controlled using the chain-of-custody procedures specified in Permit Attachment XI-4.

[Note: The sampling and analysis procedures described in the Part B Permit Application must be designed to provide a reliable indication of ground-water quality below the waste management area and be compatible with the statistical analysis method.]

XI.D.5. The Permittee must determine the concentration of hazardous constituents in the ground water at the compliance point at least quarterly during the compliance period which was specified in Permit Condition XI.C.3. [40 CFR 264.99(d)]

[Note: The Permit Writer can require more frequent collection of samples, if necessary.]

XI.D.6 The Permittee must annually analyze samples from all monitoring wells, at the compliance point, for all constituents listed in Appendix IX, 40 CFR 261, during the compliance period. [40 CFR 264.99(f)]

[Note: The Permit Writer can require more frequent collection of Appendix IX samples, if necessary.]

XI.E. ELEVATION OF THE GROUND-WATER SURFACE

XI.E.1. The Permittee shall determine the ground-water surface elevation at each monitoring well each time ground water is sampled in accordance with Permit Condition XI.G. [40 CFR 264.97(f)]

[Note: The Permit Writer should include Permit Condition XI.E.2. if new monitoring wells are installed. The surveyed ground surface elevation of all existing monitoring wells is required on the facility map from the Part B Permit Application.]

XI.E.2. The Permittee shall report the surveyed elevation of the monitoring well(s) when installed (with as-built drawings). [Note: The total depth of wells and the elevation of the following should be recorded: top of casing, ground surface and/or apron elevation, and the protective casing.]

XI.F. STATISTICAL PROCEDURES

[Note: 40 CFR 264, Subpart F regulations were undergoing revisions at the time this permit module was prepared. The new regulations will specify six performance standards that the statistical methods and sampling procedures must meet. The statistical procedures in this permit module are based on 40 CFR 264, Subpart F, July 1, 1987.]

When evaluating the monitoring results in accordance with Permit Condition XI.G., the Permittee shall use the following procedures:

[Note: The Permittee must use a statistical procedure that provides reasonable confidence that the migration of hazardous constituents from a regulated unit into and through the aquifer will be indicated. The Permit Writer must specify a statistical procedure in the Permit that:

- **Is appropriate for the distribution of the data used to establish background values or concentration limits and**
- **Provides a reasonable balance between the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit.] [40 CFR 264.97(c)(2)(i) and (ii)]**

XI.G. MONITORING PROGRAM AND DATA EVALUATION

The Permittee shall determine ground-water quality as follows:

XI.G.1. The Permittee shall collect, preserve, and analyze ground-water samples pursuant to Permit Condition XI.D.

XI.G.2. The Permittee shall determine the concentration of hazardous constituents (as specified in Permit Condition XI.C) in ground water at each monitoring well (required under Permit Condition XI.B.), at the compliance point, during the compliance period. These determinations shall be made **[The Permit Writer should specify the frequency. The frequency must be at least quarterly during the compliance period.]** [40 CFR 264.99(d)]

XI.G.3. The Permittee shall determine the ground-water flow rate and direction in the uppermost aquifer at least annually. [40 CFR 264.99(e)]

XI.G.4. The Permittee shall analyze samples from all monitoring wells, at the compliance point, for all constituents contained in 40 CFR 261, Appendix IX **[The Permit Writer should specify the frequency. The frequency must be at least annually]**, to determine whether additional hazardous constituents are present in the uppermost aquifer. If the Permittee finds additional constituents present (i.e., not listed in Permit Condition XI.C.), their concentrations shall be reported to the Regional Administrator in writing within seven (7) days from completion of the analysis. [40 CFR 264.99(f)]

XI.G.5. For each hazardous constituent identified in Permit Condition XI.C., the Permittee shall determine whether there is a statistically significant increase (i.e., means and variances) over the concentration limit for that parameter or constituent each time the concentration of hazardous constituents is monitored in ground water at the compliance point, pursuant to Permit Condition XI.G.2. In determining whether such an increase has occurred, the Permittee shall compare the ground-water quality at each monitoring well specified in Permit Condition XI.C. to the concentration limit for that constituent, in accordance with the procedures specified in Permit Condition XI.F. [40 CFR 264.99(h)(1) and (h)(2)]

XI.G.6. The Permittee shall perform the statistical evaluation required by Permit Condition XI.G.5. within **[Note: The Permit Writer should specify the time period, considering the complexity of the statistical test and the availability of laboratory facilities to perform the ground-water sample analysis.]** days from completion of the sampling analysis. [40 CFR 264.99(h)(2)]

XI.H. REPORTING AND RECORDKEEPING

XI.H.1. The Permittee shall enter all monitoring, testing, and analytical data obtained pursuant to Permit Condition XI.G. in the operating record. The data must include all computations, calculated means, variances, and results of statistical tests. [40 CFR 264.73(b)]

[Note: The regulations do not require the Permittee to routinely submit all the ground-water sampling analytical results, statistical evaluations, or results of the annual determination of the ground-water flow rate and direction. Such information is required to be submitted when there are significant changes in hazardous constituent concentrations or there are changes in the ground-water flow rate or direction which negate or adversely alter monitoring system effectiveness. However, the Permit Writer may require this "routine" information. Include Permit Condition XI.H.2. if the facility is to submit the information on a regular basis.]

XI.H.2. The Permittee shall submit the analytical results required by Permit Conditions XI.E., XI.G.2., XI.G.3., and XI.G.5., in accordance with the following schedule:

[Note: The following is an example of a quarterly ground-water report schedule:

Samples to be Collected During the Preceding Months of	Results Due to the Regional Administrator By
January - February	April 15
April - May	July 15
July - August	October 15
October - November	January 15]

XI.H.3. If the Permittee determines, pursuant to Permit Condition XI.G., there is a statistically significant increase above the concentration limits for the constituents specified in Permit Condition XI.C. (indicating that the ground-water protection standard is being exceeded), the Permittee shall notify the Regional Administrator in writing within seven (7) days. (40 CFR 264.99(i)(1)]

XI.H.4. The Permittee shall report concentrations of any additional Appendix IX constituents (i.e., not listed in Permit Condition XI.C) to the Regional Administrator within seven (7) days from completion of the analysis. [40 CFR 264.99(f)]

XI.I. ASSURANCE OF COMPLIANCE

The Permittee shall assure that monitoring and corrective action measures necessary to achieve compliance with the ground-water protection standard are taken during the term of the Permit. [40 CFR 264.99(k)(1)]

XI.J. SPECIAL REQUIREMENT IF THE GROUND-WATER PROTECTION STANDARD IS EXCEEDED

XI.J.1. The Permittee must notify the Regional Administrator in writing within seven (7) days if the ground-water protection standard has been exceeded at any monitoring well. The notification must indicate which concentration limits have been exceeded. [40 CFR 264.99(i)(1)]

XI.J.2. The Permittee must submit to the Regional Administrator a permit modification to establish a corrective action program meeting 40 CFR 264.100 requirements within 180 days, or within 90 days if the Permittee has previously submitted an engineering feasibility study. [40 CFR 264.99(i)(2)] [Note: The information requirements for the permit modification are outlined in 40 CFR 264.99(i)(2)(i) and (i)(2)(ii).]

XI.J.3. The Permittee may make a demonstration that the ground-water protection standard was exceeded due to sources other than a regulated unit or errors in sampling, analysis or evaluation. [40 CFR 264.99(j)]

XI.J.3.a. The Permittee must notify the Regional Administrator in writing, within seven (7) days, that a demonstration will be made. [40 CFR 264.99(j)(1)]

XI.J.3.b. The Permittee must submit a report to the Regional Administrator, within 90 days, that demonstrates that a source other than a regulated unit caused the ground-water protection standard to be exceeded or that the apparent non-compliance was a result of an error in sampling, analysis or evaluation. [40 CFR 264.99(j)(2)]

XI.J.3.c. The Permittee must submit to the Regional Administrator within 90 days an application for a permit modification to make any appropriate changes in the compliance monitoring program at the facility. [40 CFR 264.99(j)(3)]

XI.J.3.d. The Permittee must continue the compliance monitoring program in accordance with 40 CFR 264.99.

XI.J.4. If the Permittee or the Regional Administrator determines that the compliance monitoring program no longer satisfies the requirements of 40 CFR 264.99, the Permittee must submit a permit modification application within 90 days of the determination detailing appropriate changes to the compliance monitoring program. [40 CFR 264.99(k)]

XI.K. REQUEST FOR PERMIT MODIFICATION

XI.K.1. If the Permittee or the Regional Administrator determines the ground-water protection standard is being exceeded, the Permittee shall submit to the Regional Administrator an application for a permit modification to establish a corrective action program. [40 CFR 264.99(i)(2)]

[Note: Submittal is required within 90 days if an engineering feasibility study has been previously submitted to the Regional Administrator; within 180 days otherwise. The application content is described in 40 CFR 264.99(i)(2).]

XI.K.2. If the Permittee or the Regional Administrator determines the compliance monitoring program no longer satisfies the requirements of 40 CFR 264.99, then, within 90 days, the Permittee must submit an application for a permit modification to make any appropriate changes to the program. [40 CFR 264.99(k)]

PERMIT ATTACHMENT REFERENCED IN MODULE XI - GROUND-WATER COMPLIANCE MONITORING

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other number schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
G.W.1	Maximum Concentration of Constituents for Ground-Water Protection
XI-1	Facility map depicting ground-water monitoring wells and regulated units
XI-2	Plans and specifications for monitoring well construction, installation and maintenance
XI-3	Methodology for monitoring well abandonment
XI-4	Sampling and Analysis Plan
XI-5	Statistical Procedures

September 1988

ATTACHMENT G.W.1
(to Module XI - Ground-Water Compliance Monitoring)

Maximum Concentration of Constituents for Ground-Water Protection

Constituent	Maximum concentration (Milligrams per liter)
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin (1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,9a-octahydro-1,4-endo, endo-5,8-dimethano naphthalene)	0.0002
Lindane (1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer)	0.004
Methoxychlor (1,1,1-Trichloro-2,2-bis (p-methoxyphenylethane)	0.1
Toxaphene ($C_{10}H_{10}Cl_6$, Technical chlorinated camphene, 67-69 percent chlorine)	0.005
2,4-D (2,4-Dichlorophenoxyacetic acid)	0.1
2,4,5-TP Silvex (2,4,5-Trichlorophenoxypropionic acid)	0.01

Source: 40 CFR 264.94, Table 1, July 1987.

September 1988

MODULE XII(A) - CORRECTIVE ACTION FOR REGULATED UNITS

[Note: This module provides permit conditions for waste management units which have exceeded the ground-water protection standard at any monitoring well at the point of compliance. If the ground-water protection standard is exceeded at any monitoring well at the point of compliance, a corrective action program must be implemented to bring the unit back into compliance with the standard. A corrective action program may be permitted separately after receipt of an application for a permit modification or it may be specified as part of the Permit for the compliance monitoring program.]

[Note: On July 9, 1987, a federal rule was finalized to require analysis for 40 CFR 261, Appendix IX, rather than Appendix VIII, hazardous constituents pursuant to 40 CFR 264.98 and 264.99, (1) if a statistically significant increase occurs for any detection monitoring parameters or constituents and (2) annually under compliance monitoring. The Appendix IX list is an abbreviated Appendix VIII list, with some additional constituents. This permit module incorporates this new rule.]

[Note: Under 40 CFR 264.91(b) the Regional Administrator may include one or more of the following programs in a permit: (1) detection monitoring (Module X), (2) compliance monitoring (Module XI), and (3) corrective action [Module XII(A)]. If more than one program is included in the Permit, the Permit Writer is to specify the circumstances or conditions under which each program will be required. It is possible that more than one program will be operable at the same time at a facility, or that the programs will be conditional based on a sequence of events. For example, the sequence set up in the Permit could include a detection monitoring program that triggers an Appendix IX analysis that triggers a Permittee option to apply for a variance (e.g., other contamination source or sampling error) and if the Permittee fails to seek or fails to obtain a variance, then compliance monitoring is triggered. The Permit could also set the ground water protection standard, with a provision for the Permittee to apply for an Alternate Concentration Limit (ACL), and in the absence of an ACL application or denial of an ACL, or exceedence of an ACL or pre-set limit, the triggering of the corrective action program. The corrective action program could include plume assessment, corrective measures study and design, and implementation of corrective action. Setting up such a sequence in the Permit reduces the number of permit modifications that may be needed and decreases the administrative time needed to get on with subsequent steps in the process and ultimately, the time required to get corrective action under way, if needed.]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

XII(A).A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information: description of the waste management unit(s) for which corrective action is required; number, location, and depth of monitoring wells; which wells are upgradient and downgradient; hazardous constituents and concentration limits; compliance period for each waste management unit; any special features associated with the operation; and a reference to any special permit conditions.]

XII(A).B. WELL LOCATION, INSTALLATION AND CONSTRUCTION

[Note: For specific Agency guidance on monitoring well design and construction, hydrogeologic site characterization and location of monitoring wells, the Permit Writer should consult the EPA RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (September 1986).]

The Permittee shall (install and) maintain a ground-water monitoring system to comply with the requirements specified below: [40 CFR 264.100(d)]

XII(A).B.1. The Permittee shall (install and) maintain ground-water monitoring wells at the locations specified on the map in Permit Attachment XII(A)-1 and in conformance with the following list: [40 CFR 264.100(a)(3) and (d)]

[Note: The Permit Writer should specify the number and locations of upgradient and downgradient wells. A brief description of the locations of the wells, relative to the regulated units and geological formations, should also be provided. The description should identify the spacing of wells and screened depths (intervals).]

[Note: The map must show all monitoring well locations and provide unique identifiers for each well. The number and location of the wells must meet the requirements of 40 CFR 264.95 (Point of Compliance) and 40 CFR 264.97(a) or (b) (number, location, and depth of wells). The number and

location of monitoring wells must be sufficient to identify and define all potential release pathways from the regulated units based on site-specific hydrogeologic characterization. The map should make a distinction among point-of-compliance wells, withdrawal wells (for pump and treat systems), and observation wells or piezometers. This may include the area between the point of compliance and the facility boundary.]

XII(A).B.2. The Permittee shall (construct and) maintain the monitoring wells identified in Permit Condition XII(A).B.1., in accordance with the plans and specifications presented in Permit Attachment XII(A)-2. [40 CFR 264.100(d)]

[Note: The plans and specifications contained in the Part B Permit Application must meet the requirements of 40 CFR 264.97(c). They should consist of design drawings and design criteria applicable to all wells, as well as individual well specifications identifying depth, and location of screened intervals.]

[Note: If determined to be necessary to protect human health or the environment, the Permit Writer should include Permit Condition XII(A).B.3., specifications on how monitoring wells are plugged and abandoned. HSWA Section 212 provides EPA with this authority. Several states also have regulations which cover monitoring well abandonment.]

XII(A).B.3. All wells deleted from the monitoring program shall be plugged and abandoned in accordance with Permit Attachment XII(A)-3. Well plugging and abandonment methods and certification shall be submitted to the Regional Administrator within [The Permit Writer should specify the submittal period.] from the date the wells are removed from the monitoring program.

XII(A).C. GROUND-WATER PROTECTION STANDARD

[Note: The Permit Writer must establish concentration limits for the constituents listed in this section, pursuant to 40 CFR 264.94(a), to implement the ground-water protection standard. (The concentration limits may have been established in the Compliance Monitoring Module.) Concentration limits for hazardous constituents are established for each waste management area to determine the ground-water protection standard (GWPS) at the facility. There are four ways concentration limits can be established to set the GWPS: (1) pooled background levels of the hazardous constituents determined from facility ground-water monitoring;

(2) **maximum constituent concentrations listed in Table 1, 40 CFR 264.94(a) - which is Permit Attachment G.W.1 to this module; (3) alternate concentration limits (ACLs) proposed by the Permittee; or (4) the concentration limits may be established through sampling at upgradient wells each time the ground water is sampled at the compliance point, if there is a high temporal correlation. The GWPS may be a combination of these four methods. For detailed information on ACLs, consult the EPA Alternate Concentration Limit Guidance (July 1987).**

XII(A).C.1. The Permittee shall implement a corrective action program to ensure that regulated units are in compliance with the ground-water protection standard. [40 CFR 264.100(d)] The following hazardous constituents and their concentration limits comprise the ground-water protection standard: [40 CFR 264.93 and 264.94]

Hazardous Constituents	Concentration Limits

XII(A).C.2. The Permittee shall monitor **[The Permit Writer should specify the identification number(s) of the well(s) to be monitored.]** at the point of compliance, and those wells between the point of compliance and the facility boundary, as described in Permit Condition XII(A).B., and as designated in Permit Attachment XII(A)-2. [40 CFR 264.95 and 264.100(d)]

XII(A).C.3. The Permittee shall monitor for the following hazardous constituents during the compliance period. **[The Permit Writer should specify the compliance period.]** [40 CFR 264.93]

[Note: The Permit Writer should develop a list of monitoring constituents to establish initial monitoring requirements using the following information submitted by the Permittee; waste analysis plan, waste characterization, site hydrogeologic characterization, Appendix IX ground-water sample analyses determined from compliance monitoring, proposed monitoring constituents, corrective action program, and engineering feasibility study.]

XII(A).D. CORRECTIVE ACTION PROGRAM

XII(A).D.1. The Permittee shall begin corrective action within **[The Permit Writer should specify the time period.]** from the time the ground-water protection standard was exceeded. [40 CFR 264.100(c)]

XII(A).D.2. The Permittee shall implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits (as required under Permit Condition XII(A).D.1.) at the compliance point by removing the hazardous waste constituents or by treating them in place. [40 CFR 264.100(b)]

XII(A).D.3. The Permittee shall conduct a corrective action program to remove or treat in place any hazardous constituents that exceed concentration limits in ground water between the compliance point and the downgradient facility property boundary, in accordance with the procedures specified in Permit Attachment XII(A)-4.. [40 CFR 264.100(e)]

[Note: **The Permit Writer must specify the corrective action measures to be taken and the schedule in which these measures are to be taken. The corrective action program and engineering feasibility study submitted by the Permittee should contain all appropriate measures to ensure that ground-water quality will achieve compliance in a reasonable time period. The Permit Writer may want to utilize the corrective action program (and the engineering feasibility study) as an Attachment(s). The corrective action measures must be initiated and completed within a reasonable period of time and may be terminated once the concentrations of hazardous constituents are reduced to levels below their respective concentration limits, as specified in Permit Condition XII(A).C.] [40 CFR 264.100(f)]**

XII(A).D.4. **If the ground-water protection standard is met during the compliance period, the Permittee shall continue corrective action to the extent necessary to ensure that the ground-water protection standard is not exceeded. If corrective action is required beyond the compliance period, it must continue until the** ground-water protection standard has not been exceeded for three consecutive years. [40 CFR 264.100(f)]

XII(A).E. SAMPLING AND ANALYSIS PROCEDURES

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the ground-water monitoring wells described in Permit Condition XII(A).B.: [40 CFR 264.97(d) and (e)]

XII(A).E.1. Samples shall be collected by the techniques described in Permit Attachment XII(A)-5.

XII(A).E.2. Samples shall be preserved [and shipped (when shipped off site for analysis)], in accordance with the procedures specified in Permit Attachment XII(A)-5.

XII(A).E.3. Samples shall be analyzed according to the procedures specified in Permit Attachment XII(A)-5.

XII(A).E.4. Samples shall be tracked and controlled using the chain-of-custody procedures specified in Permit Attachment XII(A)-5.

[Note: The sampling and analytical procedures described in the Part B Permit Application must be designed to provide a reliable indication of the quality of the ground water below the facility, as required by 40 CFR 264.97(d) and (e), and be compatible with the statistical analysis method.]

XII(A).F. GROUND-WATER SURFACE ELEVATION

XII(A).F.1. The Permittee shall determine the ground-water surface elevation at each well each time ground water is sampled, in accordance with Permit Condition XII(A).H. [40 CFR 264.97(f)]

[Note: The Permit Writer should include Permit Condition XII(A).F.2. if new monitoring wells are installed. The surveyed ground surface elevation of all existing monitoring wells is required on the facility map in the Part B Permit Application.]

XII(A).F.2. The Permittee shall report the surveyed elevation of the monitoring well(s) when the well(s) is (are) installed. **[Note: The total depth of wells and the**

elevation of the following should be reported: top of casing, ground surface and/or apron elevation, and the protective casing.]

XII(A).G. STATISTICAL PROCEDURES

[Note: 40 CFR 264 Subpart F regulations were undergoing revisions at the time this permit module was prepared. The new regulations will specify six performance standards that the statistical method and sampling procedures must meet. The statistical procedures in this permit module are based on 40 CFR 264 Subpart F, July 1, 1987.]

When evaluating the monitoring results to determine the effects of corrective action measures, in accordance with Permit Condition XII(A).H., the Permittee shall use the following procedures:

[Note: The Permittee must use a procedure for determining whether a statistically significant change has occurred. The procedure must reasonably balance the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit.]

The Permittee shall conduct the statistical procedures as presented in Permit Attachment XII(A)-6.

XII(A).H. MONITORING PROGRAM AND DATA EVALUATION

The Permittee shall establish and implement a ground-water monitoring program to demonstrate the effectiveness of the corrective action program. Ground-water monitoring shall be conducted and shall be as effective as the program for compliance monitoring under 40 CFR 264.97 and 40 CFR 264.99. The Permittee shall determine ground-water quality as follows:

XII(A).H.1. **The Permittee shall collect, preserve and analyze samples in accordance with Permit Condition XII(A).E.**

XII(A).H.2. **The Permittee shall determine the concentrations of the hazardous constituents specified in Permit Condition XII(A).C., throughout the compliance period and any extensions due to corrective action implementation, to demonstrate conformance with the ground-water protection standard. [40 CFR 264.96] The Permittee shall determine the concentration of hazardous constituents in ground water at each monitoring well at the compliance point, at least quarterly. [40 CFR 264.100(d)]**

[Note: The Permit Writer may specify more frequent monitoring, if necessary.]

XII(A).H.3. The Permittee shall analyze samples from all monitoring wells at the compliance point for all constituents contained in 40 CFR 261, Appendix IX **[Note: The frequency to be specified must be at least annually.]**, to determine if additional hazardous constituents are present in the uppermost aquifer. If the Permittee finds additional hazardous constituents present (i.e., not listed in Permit Condition XII(A).C.), their concentrations shall be reported to the Regional Administrator in writing within seven days from completion of the analysis.

XII(A).H.4. The Permittee shall determine the ground-water flow rate and direction in the uppermost aquifer at least annually. [40 CFR 264.98(e)]

XII(A).H.5. The Permittee shall statistically compare the measured concentration of each monitored hazardous constituent with its concentration limit in the ground-water protection standard each time ground-water quality is determined, in accordance with Permit Condition XII(A).H.2. The Permittee must compare the ground-water quality measured at each point of the compliance monitoring well and any other specified wells, as stated in Permit Condition XII(A).C. and in accordance with the procedures specified in Permit Condition XII(A).G.

XII(A).I. RECORDKEEPING AND REPORTING

XII(A).I.1. The Permittee shall enter all monitoring, testing and analytical data obtained, according to Permit Condition XII(A).H.2., in the operating record. The data must include all computations, calculated means, variances, and results of the statistical test(s) that the Regional Administrator has specified. [40 CFR 264.73(b)(6)]

XII(A).I.2. The Permittee shall report, in writing, semi-annually to the Regional Administrator on the effectiveness of the corrective action program. These reports shall be submitted on **[April 1 and October 1, for example]** of each year until the corrective action program has been completed. [40 CFR 264.100(g)]

[Note: The regulations do not require the Permittee to routinely submit all the ground-water sampling analytical results, statistical evaluations or results of the annual determination of the ground-water flow rate and direction. Such information is required to be submitted when there are significant changes in hazardous constituent concentrations or there are significant changes in the ground-water flow rate or direction which negate or adversely alter the monitoring system effectiveness. The Permit Writer may require this "routine" information. Include Permit Condition XII(A).I.3. if the facility is to submit the information on a regular basis.]

XII(A).I.3. The Permittee shall submit the analytical results required by Permit Conditions XII(A).F., XII(A).H.2., XII(A).H.3., XII(A).H.4., and XII(A).H.5., in accordance with the following schedule:

[Note: The Permit Writer should specify the report schedule for ground-water sampling, the statistical evaluation of ground-water sampling results, and the determination of the ground-water flow rate and direction.

Example of a Quarterly Ground-Water Report Schedule:

Samples to be Collected During the Preceding Months of	**Results Due to the Regional Administrator By**
January - February	**April 15**
April - May	**July 15**
July - August	**October 15**
October - November	**January 15]**

XII(A).J. REQUEST FOR PERMIT MODIFICATION

If the Permittee or the Regional Administrator determines that the corrective action program established by this Permit no longer satisfies the regulatory requirements, then the Permittee must submit an application for a permit modification within 90 days to make any appropriate changes to the program. [40 CFR 264.100(h)]

PERMIT ATTACHMENTS REFERENCED IN MODULE XII(A) - CORRECTIVE ACTION FOR REGULATED UNITS

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual Permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
G.W.1	Maximum Concentration of Constituents for Ground-Water Protection
XII(A)-1	Facility Map depicting the monitoring well locations and regulated units
XII(A)-2	Plans and specifications for monitoring well construction, installation and maintenance
XII(A)-3	Methodology for Monitoring Well Abandonment
XII(A)-4	Corrective Action Program
XII(A)-5	Sampling and Analysis Plan
XII(A)-6	Statistical Procedures

ATTACHMENT G.W.1
(to Module XII(A) - Corrective Action for Regulated Units)

Maximum Concentration of Constituents for Ground-Water Protection*

Constituent	Maximum concentration (Milligrams per liter)
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin (1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,9a-octahydro-1,4-endo, endo-5,8-dimethano naphthalene)	0.0002
Lindane (1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer)	0.004
Methoxychlor (1,1,1-Trichloro-2,2-bis (p-methoxyphenylethane)	0.1
Toxaphene ($C_{10}H_{10}Cl_6$, Technical chlorinated camphene, 67-69 percent chlorine)	0.005
2,4-D (2,4-Dichlorophenoxyacetic acid)	0.1
2,4,5-TP Silvex (2,4,5-Trichlorophenoxypropionic acid)	0.01

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* Source: 40 CFR 264.94, Table 1, July 1987.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 30 1988

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Model Permit--Module for Corrective Action for Solid Waste Management Units

FROM: Joseph Carra, Director Joseph A. Carra
Permits and State Programs Division

TO: Addressees

Attached for your review and use is draft Module XII(B), Corrective Action for Solid Waste Management Units. This module is to be inserted in the draft Model RCRA Permit for Hazardous Waste Management Facilities which was sent to you earlier. Comments on this module are requested by December 16, 1988 along with comments on the other modules.

This permit module provides a basic framework for Permit Writers to use in writing permit conditions addressing the corrective action provisions of Sections 3004(u) and (v) of the Resource Conservation and Recovery Act (RCRA). These sections were added to RCRA by the Hazardous and Solid Waste Amendments (HSWA) of 1984, and are therefore "HSWA provisions".

Section 3004(u) of RCRA [and 40 CFR 264.101] requires that permits issued under Section 3005(c) after November 8, 1984, address corrective action for releases of hazardous waste or hazardous constituents from any solid waste management unit (SWMU) at the facility, regardless of when waste was placed in the unit or whether the unit is currently active. Section 3004(v) [and 40 CFR 264.100(e)(2)] authorizes EPA to require corrective action by the facility owner or operator beyond the facility boundary, when necessary to protect human health and the environment, unless the owner or operator demonstrates that permission to undertake such action, despite the owner/operator's best efforts, was denied. Section 3005(c)(3) of RCRA (commonly known as the "omnibus" provision) [and 40 CFR 270.32(b)(2)] gives EPA the authority to add any additional conditions to RCRA permits deemed necessary to protect human health and the environment. These RCRA and CFR sections may be cited as authorities for permit conditions in this module.

This module has been structured on the assumption that an RFA (RCRA Facility Assessment) has been completed for the facility. The results of the RFA should be used as a basis for the development of compliance schedules for investigating and correcting releases from SWMUs.

This module should not be applied to permits for land treatment demonstrations using field test or laboratory analyses under 40 CFR 270.63(a); emergency permits under Section 270.61; permits-by-rule for ocean disposal barges or vessels under Section 270.60(a); research, development, and demonstration permits under Section 270.65; and state-wide mobile treatment unit permits under proposed Section 270.66.

The final rule on permit modifications for hazardous waste management facilities (53 FR 37912, September 28, 1988) does not specifically address permit modifications for corrective action. However, we expect that permit modifications may be necessary at many facilities needing corrective action. Therefore, this module integrates the new permit modification procedures (i.e., Class I, Class II, and Class III modifications) into the corrective action process.

This module was prepared primarily by the staff of the Permits Branch, Office of Solid Waste. It is based on the draft Subpart S rule proposal. References that may be useful in developing permit conditions include the RCRA Facility Investigation (RFI) Guidance, Volumes I-IV (OSWER Policy Directive No. 9502.00-6C), and the RCRA Corrective Action Plan (CAP) (OSWER Policy Directive No. 9902).

Comments or questions on this module should be addressed to Sharon Atkinson, Permits and State Programs Division (OS-340), Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C. 20460, or FTS 755-0357. General comments or questions on the model permit should be addressed to Kenneth Shuster at the same address or FTS 382-2214.

Attachment

Addressees:

William Torrey, Region I
Gerald Levy, Region I
Linda Murphy, Region I
Mary Jane O'Donnell, Region I
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MODULE XII(B)
CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS
SCHEDULE OF COMPLIANCE

1. SUMMARY OF RFA FINDINGS/RESULTS

[NOTE: Including a summary of RCRA Facility Assessment (RFA) findings/results in the Permit is optional. Including such a summary may be most appropriate when the RFA identified numerous SWMUs which pose or potentially pose multi-media environmental problems.

If a summary is included in the Corrective Action Schedule of Compliance, this Permit Condition may provide information collected from file reviews, site inspections, and sampling visits (where available) on all SWMUs that have operated (or are currently operating) at the facility, including their unit characteristics, waste characteristics, migration pathways (e.g., geologic setting, hydrogeologic setting, atmospheric conditions), evidence of release, and exposure potential to human and environmental receptors. The Permit Writer may attach to the Permit (Attachment XII(B)-1) a topographic map of the facility indicating the location of all SWMUs. (Refer to Permit Writer Appendix 1 for a sample topographic map.)

In addition to identifying and providing information on all SWMUs at the facility, this summary may discuss the nature of facility operations (e.g., wastes generated, and treatment, storage, and/or disposal methods), any emission controls in place, any actions taken (both investigatory and remedial) at the site related to corrective action, and relevant communications between the regulating agency and the Permittee.

This Permit Condition should indicate which SWMUs, releases of hazardous wastes including hazardous constituents, and media of concern are to be addressed in the RCRA Facility Investigation (RFI) (i.e., Permit Condition XII(B).7.A) or through interim measures identified at the time of Permit issuance under Permit Condition XII(B).10.A.]

2. DEFINITIONS

[NOTE: Including definitions in the Corrective Action Schedule of Compliance is recommended since they will clarify the terms used throughout the Schedule of Compliance. However, defining these terms within the Schedule is not a legal necessity. The following definitions are the same as those contained within proposed §264.501.]

For purposes of this Corrective Action Schedule of Compliance the following definitions shall apply:

"Facility" means all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA.

"Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous constituents).

"Solid waste management unit" means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

"Hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. The term hazardous waste includes hazardous constituent as defined below.

"Hazardous constituent" means any constituent identified in Appendix VIII of 40 CFR Part 261, or any constituent identified in Appendix IX of 40 CFR Part 264.

3. STANDARD CONDITIONS

A. Section 3004(u) of RCRA, as amended by HSWA, and 40 CFR §264.101 require that permits issued after November 8, 1984, address corrective action for releases of hazardous wastes including hazardous constituents from any solid waste management unit (SWMU) at the facility, regardless of when the waste was placed in the unit.

B. Failure to submit the information required in this Corrective Action Schedule of Compliance, or falsification of any submitted information, is grounds for termination of this Permit (40 CFR §270.43). The Permittee shall ensure that all plans, reports, notifications, and other submissions to the Regional Administrator required in this Corrective Action Schedule of Compliance are signed and certified in accordance with 40 CFR §270.11. ________ [e.g., five (5)] copies of these plans, reports, notifications or other submissions shall be submitted to the Regional Administrator and sent by certified mail or hand delivered to:

[NOTE: Insert Regional office address as follows:]

U.S. Environmental Protection Agency
Region ___
Division/Branch
Address (including mail code)

C. All plans and schedules required by the conditions of this Corrective Action Schedule of Compliance are, upon approval of the Regional Administrator, incorporated into this Schedule of Compliance by reference and become an enforceable part of this Permit. Any noncompliance with such approved plans and schedules shall be termed noncompliance with this Permit. Extensions of the due dates for submittals may be granted by the Regional Administrator in accordance with the permit modification processes under 40 CFR §270.41.

D. If the Regional Administrator determines that further actions beyond those provided in this Corrective Action Schedule of Compliance, or changes to that which is stated herein, are warranted, the Regional Administrator shall modify the Schedule of Compliance either according to procedures in Section XII(B).17 of this Permit, or according to the permit modification processes under 40 CFR §270.41.

E. All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data, and other supporting information gathered or generated during activities undertaken pursuant to this Corrective Action Schedule of Compliance shall be maintained at the facility [or other location approved by the Regional Administrator] during the term of this Permit, including any reissued Permits.

4. REPORTING REQUIREMENTS

A. The Permittee shall submit to the Regional Administrator signed ______________ [e.g., quarterly, monthly] progress reports of all activities (i.e., SWMU Assessment, Interim Measures, RCRA Facility Investigation, Corrective Measures Study) conducted pursuant to the provisions of this Corrective Action Schedule of Compliance, beginning no later than ______________ [e.g., ninety (90)] calendar days after the Permittee is first required to begin implementation of any requirement herein. These reports shall contain:

1. A description of the work completed;
2. Summaries of all findings, including summaries of laboratory data;
3. Summaries of all problems or potential problems encountered during the reporting period and actions taken to rectify problems; and
4. Projected work for the next reporting period.

[NOTE: More specific reporting requirements, if applicable, should be listed above. In addition, the Permit Writer may tailor these reporting requirements to track the Permittee's progress in addressing particular SWMUs, areas of concern, or releases of hazardous wastes including hazardous constituents. Finally, the timing for submission of reports should reflect the nature of the investigation (e.g., where results of an assessment, investigation, or study are more immediate, progress reports can be required soon after the start-up of the assessment, investigation, or study.)]

B. Copies of other reports (e.g., inspection reports), drilling logs and laboratory data shall be made available to the Regional Administrator upon request.

C. As specified under Permit Condition XII(B).3.D, the Regional Administrator may require the Permittee to conduct new or more extensive assessments, investigations, or studies, as needed, based on information provided in these progress reports or other supporting information.

5. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY-IDENTIFIED SOLID WASTE MANAGEMENT UNITS(S)

A. The Permittee shall notify the Regional Administrator in writing of any newly-identified SWMU(s) (i.e., a unit not specifically identified during the RFA [and listed in Section XII(B).1, if this optional section is included in the Corrective Action Schedule of Compliance]), discovered during the course of ground-water monitoring, field investigations, environmental audits, or other means, no later than ______________ [e.g., fifteen (15)] calendar days after discovery.

B. After such notification, the Regional Administrator may request, in writing, that the Permittee prepare a Solid Waste Management Unit (SWMU) Assessment Plan and a proposed schedule of implementation and completion of the Plan for any additional SWMU(s) discovered subsequent to the issuance of this Permit.

C. Within ______________ [e.g., ninety (90)] calendar days after receipt of the Regional Administrator's request for a SWMU Assessment Plan, the Permittee shall prepare a SWMU Assessment Plan for determining past and present operations at the unit, as well as any sampling and analysis of ground water, land surface and subsurface strata, surface water or air, as necessary to determine whether a release of hazardous waste including hazardous constituents from such unit(s) has occurred, is likely to have occurred, or is likely to occur. The SWMU Assessment Plan must demonstrate that the sampling and analysis program, if applicable, is capable of yielding representative samples and must include parameters sufficient to identify migration of hazardous waste including hazardous constituents from the newly-discovered SWMU(s) to the environment.

[NOTE: The SWMU Assessment is equivalent in scope to the RFA. The assessment differs from the RFA, however, in that the RFA was conducted by the EPA and/or the State prior to Permit issuance, whereas the SWMU Assessment will be conducted by the Permittee. Further investigations deemed necessary based on findings in the SWMU Assessment Report will be addressed in Permit Condition XII(B).5.F.]

D. After the Permittee submits the SWMU Assessment Plan, the Regional Administrator shall either approve or disapprove the Plan in writing.

If the Regional Administrator approves the Plan, the Permittee shall begin to implement the Plan within ______________ [e.g., fifteen (15)] calendar days of receiving such written notification.

If the Regional Administrator disapproves the Plan, the Regional Administrator shall either (1) notify the Permittee in writing of the Plan's deficiencies and specify a due date for submittal of a revised Plan, or (2) revise the Plan and notify the Permittee of the revisions. This Regional Administrator-revised Plan becomes the approved SWMU Assessment Plan. The Permittee shall implement the Plan within ______________ [e.g., fifteen (15)] calendar days of receiving written approval.

E. The Permittee shall submit a SWMU Assessment Report to the Regional Administrator no later than ______________ [e.g., twenty-five (25)] calendar days from completion of the work specified in the approved SWMU Assessment Plan. The SWMU Assessment Report shall describe all results obtained from the implementation of the approved SWMU Assessment Plan. At a minimum, the Report shall provide the following information for each newly-identified SWMU:

1. The location of the newly-identified SWMU in relation to other SWMUs [as indicated on the topographic map submitted under Section XII(B).1 (if the Corrective Action Schedule of Compliance includes this optional Permit Condition)];
2. The type and function of the unit;
3. The general dimensions, capacities, and structural description of the unit (supply any available drawings);
4. The period during which the unit was operated;
5. The specifics on all wastes that have been or are being managed at the SWMU, to the extent available; and

6. The results of any sampling and analysis required for the purpose of determining whether releases of hazardous wastes including hazardous constituents have occurred, are occurring, or are likely to occur from the unit.

F. Based on the results of this Report, the Regional Administrator shall determine the need for further investigations at specific unit(s) covered in the SWMU Assessment. If the Regional Administrator determines that such investigations are needed, the Regional Administrator may require the Permittee to prepare a plan for such investigations. This plan will be reviewed for approval as part of the RFI Workplan under Permit Condition XII(B).7.C of this Corrective Action Schedule of Compliance.

6. NOTIFICATION REQUIREMENTS FOR NEWLY-DISCOVERED RELEASES AT SWMUS

The Permittee shall notify the Regional Administrator, in writing, of any release(s) of hazardous waste including hazardous constituents discovered during the course of ground-water monitoring, field investigation, environmental auditing, or other activities undertaken after the commencement of the RFI, no later than ____________ [e.g., fifteen (15)] calendar days after discovery. Such newly-discovered releases may be from newly-identified units, from units for which, based on the findings of the RFA, the Regional Administrator had previously determined that no further investigation was necessary, or from units investigated as part of the RFI. The Regional Administrator may require further investigation of the newly-identified release(s). A plan for such investigation will be reviewed for approval as part of the RFI Workplan under Permit Condition XII(B).7.C.

7. RCRA FACILITY INVESTIGATION (RFI) WORKPLAN

[NOTE: If, at the time of Permit issuance, specific investigations have already been identified by the Regional Administrator and/or negotiated with the Permittee, development, submittal, and approval of an RFI Workplan may be omitted. In this way, the Regional Administrator may specify a streamlined and specific sampling and analysis approach for particular units of concern, usually to supplement incomplete characterization of contamination from particular units; such investigations may be on a faster schedule than as specified in a full RFI Workplan.]

A. On or before ______________ [e.g., ninety (90) calendar days after the effective date of this Permit] the Permittee shall submit a Workplan to the Regional Administrator to address those units, releases of hazardous waste including hazardous constituents, and media of concern which, based on the results of the RFA, require further investigation.

1. The Workplan shall describe the objectives of the investigation and the overall technical and analytical approach to completing all actions necessary to characterize the nature, direction, rate, movement, and concentration of releases of hazardous waste including hazardous constituents from specific units or groups of units, and their actual or potential receptors. The Workplan shall detail all proposed activities and procedures to be conducted at the facility, the schedule for implementing and completing such investigations, the qualifications of personnel performing or directing the investigations, including contractor personnel, and the overall management of the RFI.

   [NOTE: The RCRA Facility Investigation Workplan in the Interim Final Corrective Action Plan (CAP) (see Appendix 2) provides a "laundry list" of procedures to be used by the Permittee when conducting the RFI. The Permit Writer should review this Appendix and extract those pieces applicable to the facility based on which SWMUs, media of concern, and releases of hazardous waste including hazardous constituents are to be investigated. For example, if monitoring wells are to be installed, the Permit Writer should specify that the RFI Workplan detail the type and number of such wells, etc., and how the installation of these wells will allow the Permittee to evaluate hydrogeologic conditions at the facility and characterize the release. These site-specific requirements should be described here under Permit Condition XII(B).7.A.1.]

2. In addition, the Workplan shall discuss sampling and data collection quality assurance and data management procedures, including formats for documenting and tracking data and other results of investigations, and health and safety procedures.

[NOTE: The RCRA Facility Investigation Workplan in the CAP also provides a "laundry list" of general procedures and methods applicable to development of these components of the RFI Workplan. The Permit Writer should review this Appendix and specify further items to be incorporated here as part of Permit Condition XII(B).7.A.2.]

B. After the Permittee submits the Workplan, the Regional Administrator will either approve or disapprove the Workplan in writing.

If the Regional Administrator disapproves the Workplan, the Regional Administrator shall either (1) notify the Permittee in writing of the Workplan's deficiencies and specify a due date for submittal of a revised Plan, or (2) revise the Workplan and notify the Permittee of the revisions. This modified Workplan becomes the approved RFI Workplan.

C. The Regional Administrator shall review for approval as part of the RFI Workplan any plans developed pursuant to Permit Condition XII(B).5.F, addressing further investigations of newly-identified SWMUs, or Section XII(B).6, addressing new releases from previously-identified units. The Regional Administrator shall modify the Schedule of Compliance either according to procedures in Section XII(B).17 of this Permit, or according to the permit modification procedures under 40 CFR §270.41, to incorporate these units and releases into the RFI Workplan.

8. RCRA FACILITY INVESTIGATION WORKPLAN IMPLEMENTATION

No later than ______________ [e.g., fifteen (15)] calendar days after the Permittee has received written approval from the Regional Administrator for the RFI Workplan, the Permittee shall begin implementation of the RCRA Facility Investigation according to the schedules specified in the RFI Workplan. Pursuant to Permit Condition XII(B).3.C, the RFI shall be conducted in accordance with the approved RFI Workplan.

9. RCRA FACILITY INVESTIGATION FINAL REPORT AND SUMMARY REPORT

A. Within ______________ [e.g., sixty (60)] calendar days after the completion of the RFI, the Permittee shall submit an RFI Final Report and Summary Report. The RFI Report shall describe the procedures, methods, and results of all facility investigations of SWMUs and their releases, including information on the type and extent of contamination at the facility, sources and migration pathways, and actual or potential receptors. The RFI Final Report shall present all information gathered under the approved RFI Workplan. The Final Report must contain adequate information to support further corrective action decisions at the facility. The Summary Report shall describe more briefly the procedures, methods, and results of the RFI.

B. After the Permittee submits the RFI Final Report and Summary Report, the Regional Administrator shall either approve or disapprove the Reports in writing.

If the Regional Administrator approves the RFI Report and Summary Report, the Permittee shall mail the approved Summary Report to all individuals on the facility mailing list established pursuant to 40 CFR §124.10(c)(1)(viii), within ______________ [e.g., fifteen (15)] calendar days of receipt of approval.

If the Regional Administrator determines the RFI Final Report and Summary Report do not fully detail the objectives stated under Permit Condition XII(B).7.A, the Regional Administrator may disapprove the RFI Final Report and Summary Report. If the Regional Administrator disapproves the Reports, the Regional Administrator shall notify the Permittee in writing of the Reports' deficiencies and specify a due date for submittal of a revised Final and Summary Report. The Summary Report, once approved, shall be mailed to all individuals on the facility mailing list.

10. INTERIM MEASURES

A. The following specific interim measures have been identified by the Regional Administrator:

[NOTE: Identify the required interim measures (e.g., what they are, a schedule for their implementation, etc.). The Permit Writer should refer to "RCRA Corrective Action Interim Measures" (OSWER Policy

Directive No. 9902A) and/or the Corrective Action Plan for guidance on the development and implementation of interim corrective measures.]

The Permittee shall begin implementation of such actions within ______________ [e.g., fifteen (15)] calendar days of the date of Permit issuance.

[NOTE: Depending on the nature and extent of the required interim measures, an Interim Measures Plan may be necessary. The Plan would specify what interim measures would need to be taken, the schedule for their implementation, and the parameters or measurements by which to judge the completion of the measures. If an Interim Measures Plan is required, the underlined statement above should be deleted and replaced by the following text:

The Permittee shall submit an Interim Measures Plan within ______________ [e.g., thirty (30)] calendar days after the effective date of the Permit.

After the Permittee submits the Interim Measures Plan, the Regional Administrator shall either approve or disapprove the Plan in writing.

If the Regional Administrator approves the Plan, the Permittee shall begin to implement the Plan within ______________ [e.g., fifteen (15)] calendar days of such notification.

If the Regional Administrator disapproves the Plan, the Regional Administrator shall either (1) notify the Permittee in writing of the Plan's deficiencies and specify a due date for submittal of a revised Plan, or (2) revise the Plan and notify the Permittee of the revisions. This revised Plan becomes the approved Interim Measures Plan. The Permittee shall begin to implement the approved Plan within ______________ [fifteen (15)] calendar days upon receiving approval.]

B. If during the course of any activity initiated under this Corrective Action Schedule of Compliance, the Regional Administrator determines that a release or potential release of hazardous waste including hazardous constituents from a SWMU poses a threat to human health and the environment, the Regional Administrator may specify interim measures. The Regional Administrator shall determine the specific action(s) that must be taken to implement the interim measure, including potential permit modifications and the schedule for implementing the required measures. The Regional Administrator shall notify the Permittee in writing of the requirement to perform such interim measures. The Regional Administrator shall modify the Corrective Action Schedule of Compliance either according to procedures in Section XII(B).17 of this Permit, or according to the permit modification procedures under 40 CFR §270.41, to incorporate such interim measures into the Permit.

[NOTE: An Interim Measures Plan may also be required for measures identified in Permit Condition XII(B).10.B. In this case, the Schedule of Compliance should repeat the Interim Measures Plan approval language in Permit Condition XII(B).10.A, with one exception:

The Permittee shall submit an Interim Measures Plan within _______________ [e.g., thirty (30)] calendar days from notification of the requirement to perform interim measures.]

C. The following factors may be considered by the Regional Administrator in determining the need for interim measures:

1. Time required to develop and implement a final remedy;

2. Actual and potential exposure of human and environmental receptors;

3. Actual and potential contamination of drinking water supplies and sensitive ecosystems;

4. The potential for further degradation of the medium absent interim measures;

5. Presence of hazardous waste in containers that may pose a threat of release;

6. Presence and concentration of hazardous waste including hazardous constituents in soils that have the potential to migrate to ground water or surface water;

7. Weather conditions that may affect the current levels of contamination;

8. Risks of fire, explosion, or accident; and

9. Other situations that may pose threats to human health and the environment.

11. DETERMINATION OF NO FURTHER ACTION

[NOTE: Inclusion of this provision is optional depending on whether it is clear to the Regional Administrator at time of Permit issuance that releases or suspected releases of hazardous waste including hazardous constituents will be found to be non-existent, or otherwise of such a nature that they do not pose a threat to human health or the environment. A request for determination of no further action is initiated by the Permittee and is subject to the procedures of a Class III modification; a determination that no further action is required terminates the Corrective Action Schedule of Compliance. This provision may be included, for example, if it can be determined that contaminant levels, and the risks posed by them, are insignificant as compared with existing "background" levels (e.g., levels that are naturally occurring, or that have resulted from releases originating from outside the facility.) This provision could also be included in Permits for facilities overlaying ground water that is neither a current or potential source of drinking water, nor potentially usable for other human purposes. Conversely, this Permit condition may be inappropriate for facilities overlying potentially vulnerable Class I ground waters or those which are located adjacent to non-industrialized, residential areas.]

A. Based on the results of the RFI and other relevant information, the Permittee may submit an application to the Regional Administrator for a Class III permit modification under 40 CFR §270.42(c) to terminate the Corrective Action Schedule of Compliance. This permit modification application must contain information demonstrating that there are no releases of hazardous wastes including hazardous constituents from SWMUs at the facility that pose a threat to human health and the environment, as well as information required in 40 CFR §270.42(c), which incorporates by reference 40 CFR §270.13 through §§270.21, 270.62, and 270.63.

If, based upon review of the Permittee's request for a permit modification, the results of the RFI, and other information, including comments received during the 60-day public comment period required for Class III permit modifications, the Regional Administrator determines that releases or suspected releases which were investigated either are non-existent or do not pose a threat to human health and the environment, the Regional Administrator will grant the requested modification.

B. A determination of no further action shall not preclude the Regional Administrator from requiring continued or periodic monitoring of air, soil, ground water, or surface water, when site-specific circumstances indicate that releases of hazardous wastes including hazardous constituents are likely to occur, if necessary to protect human health and the environment.

C. A determination of no further action shall not preclude the Regional Administrator from requiring further investigations, studies, or remediation at a later date, if new information or subsequent analysis indicates a release or likelihood of a release from a SWMU at the facility that is likely to pose a threat to human health or the environment. In such a case, the Regional Administrator shall initiate either a modification to the Corrective Action Schedule of Compliance according to procedures in Section XII(B).17 of this Permit, or a major permit modification according to 40 CFR §270.41, to rescind the determination made in accordance with Permit Condition XII(B).11.A.

12. CORRECTIVE MEASURES STUDY PLAN

A. If the Regional Administrator has reason to believe that a SWMU has released concentrations of hazardous constituents in excess of an action level found in Attachment 1, or if the Regional Administrator determines that contaminants present at levels below those found in Attachment 1 pose a threat to human health and the environment given site-specific exposure conditions, the Regional Administrator may require a Corrective Measures Study (CMS) and shall notify the Permittee in writing. This notice shall identify the hazardous constituent(s) which have exceeded action levels as well as those which have been determined to threaten human health and the environment given site-specific exposure conditions. The notification may also specify remedial alternatives to be evaluated by the Permittee during the CMS.

[NOTE: It is up to the Regional Administrator to decide the size and scope of the CMS (i.e., how many alternatives are to be evaluated), focusing on plausible remedial options scaled to fit the complexity of the situation.

EPA is likely to require the owner/operator of a facility with particularly large and complex cleanup problems to analyze a full range of remedial alternatives. EPA will "streamline" the CMS analyses to the extent possible based on the type and extent of environmental problems at the facility. In other cases, the appropriate effective and protective remedy may be self-evident to both EPA and the Permittee. The Permittee, in fact, may offer a proposal for the CMS. In these situations, EPA would likely require the Permittee to develop a general CMS Plan and would approve and incorporate the specific remedy information into the Permit Schedule of Compliance according to the procedures for a major permit modification pursuant to 40 CFR §270.41. This major modification would parallel the permit modification process for a remedy chosen by the Agency after evaluation of alternatives developed pursuant to a CMS Plan.

The following discussion lays out the process and requirements for developing either a comprehensive or a streamlined CMS Plan.]

B. The Permittee shall submit a CMS Plan to the Regional Administrator within ______________ [e.g., forty-five (45)] calendar days from notification of the requirement to conduct a CMS.

The CMS Plan shall provide the following information:

1. A description of the general approach to investigating and evaluating potential remedies;
2. A definition of the overall objectives of the study;
3. The specific plans for evaluating remedies to ensure compliance with remedy standards;
4. The schedules for conducting the study; and
5. The proposed format for the presentation of information.

[NOTE: Permit Writer Appendix 3, the Corrective Measures Plan of the CAP, contains a list of specific CMS Plan requirements; review this Appendix and include as part of Permit Condition XII(B).12.B all appropriate requirements.]

C. If the Regional Administrator disapproves the CMS Plan, the Regional Administrator shall either (1) notify the Permittee in writing of the Plan's deficiencies and specify a due date for submittal of a revised Plan, or (2) revise the Plan and notify the Permittee of the revisions. This modified Plan becomes the approved CMS Plan.

13. CORRECTIVE MEASURES STUDY IMPLEMENTATION

No later than ______________ [e.g., fifteen (15)] calendar days after the Permittee has received written approval from the Regional Administrator for the CMS Plan, the Permittee shall begin to implement the Corrective Measures Study according to the schedules specified in the CMS Plan. Pursuant to Permit Condition XII(B).3.C, the CMS shall be conducted in accordance with the approved Plan.

14. CORRECTIVE MEASURES STUDY FINAL REPORT

A. Within ______________ [e.g., sixty (60)] calendar days after the completion of the CMS, the Permittee shall submit a CMS Final Report. The CMS Final Report shall summarize the results of the investigations for each remedy studied and of any bench-scale or pilot tests conducted. The CMS Report must include an evaluation of each remedial alternative. The CMS Report shall present all information gathered under the approved CMS Plan. The final report must contain adequate information to support the Regional Administrator in the remedy selection decisionmaking process, described under Section XII(B).15 of the Corrective Action Schedule of Compliance.

B. If the Regional Administrator determines that the CMS Final Report does not fully satisfy the information requirements specified under Permit Condition XII(B).12.B, the Regional Administrator may disapprove the CMS Final Report. If the Regional Administrator disapproves the Final Report, the Regional Administrator shall notify the Permittee in writing of deficiencies in the Report and specify a due date for submittal of a revised Final Report [e.g., thirty (30) calendar days after notification].

C. As specified under Permit Condition XII(B).3.D, based on preliminary results and the final CMS report, the Regional Administrator may require the Permittee to evaluate additional remedies or particular elements of one or more proposed remedies.

15. REMEDY SELECTION

A. Based on the results of the CMS and any further evaluations of additional remedies under this study, the Regional Administrator shall select a remedy from the remedial alternatives evaluated in the CMS that will (1) be protective of human health and the environment; (2) meet the concentration levels of hazardous constituents in each medium that the remedy must achieve to be protective of human health and the environment; (3) control the source(s) of release(s) so as to reduce or eliminate, to the maximum extent practicable, further releases that might pose a threat to human health and the environment; and (4) meet all applicable waste management requirements.

B. In selecting the remedy which meets the standards for remedies established under Permit Condition XII(B).15.A, the Regional Administrator shall consider the following evaluation factors, as appropriate:

1. Long-term reliability and effectiveness. Any potential remedy(s) may be assessed for the long-term reliability and effectiveness it affords, along with the degree of certainty that the remedy will prove successful. Factors that shall be considered in this evaluation include:

   a. Magnitude of residual risks in terms of amounts and concentrations of waste remaining following implementation of a remedy, considering the persistence, toxicity, mobility and propensity to bioaccumulate of such hazardous wastes including hazardous constituents;

   b.

b. The type and degree of long-term management required, including monitoring and operation and maintenance;

c. Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal or containment;

d. Long-term reliability of the engineering and institutional controls, including uncertainties associated with land disposal of untreated wastes and residuals; and

e. Potential need for replacement of the remedy.

2. Reduction of toxicity, mobility, and volume. A potential remedy(s) may be assessed as to the degree to which it employs treatment that reduces toxicity, mobility or volume of hazardous wastes including hazardous constituents. Factors that shall be considered in such assessments include:

   a. The treatment processes the remedy(s) employs and materials it would treat;

   b. The amount of hazardous wastes including hazardous constituents that would be destroyed or treated;

   c. The degree to which the treatment is irreversible; and

   d. The residuals that will remain following treatment, considering the persistence, toxicity, mobility and propensity to bioaccumulate of such hazardous wastes including hazardous constituents.

3. The short-term effectiveness of a potential remedy(s) may be assessed considering the following:

   a. Magnitude of reduction of existing risks;

   b. Short-term risks that might be posed to the community, workers, or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and redisposal or containment; and

c. Time until full protection is achieved.

4. Implementability. The ease or difficulty of implementing a potential remedy(s) may be assessed by considering the following types of factors:

   a. Degree of difficulty associated with constructing the technology;

   b. Expected operational reliability of the technologies;

   c. Need to coordinate with and obtain necessary approvals and permits from other agencies;

   d. Availability of necessary equipment and specialists; and

   e. Available capacity and location of needed treatment, storage and disposal services.

5. Cost. The types of costs that may be assessed include the following:

   a. Capital costs;

   b. Operation and maintenance costs;

   c. Net present value of capital and operation and maintenance costs; and

   d. Potential future remedial action costs.

16. PERMIT MODIFICATION FOR REMEDY

A. Based on information the Permittee submits in the RFI Final and Summary Reports, the CMS Final Report, and other information, the Regional Administrator will select a remedy and initiate a major permit modification to this Permit, pursuant to 40 CFR §270.41.

The modification shall specify the selected remedy and include, at a minimum, the following:

1. Description of all technical features of the remedy that are necessary for achieving the standards for remedies established under Permit Condition XII(B).15.A, including length of time for which compliance must be demonstrated at specified points of compliance;

2. All concentration levels of hazardous constituents in each medium that the remedy must achieve to be protective of human health and the environment;

3. All requirements for achieving compliance with these concentration levels;

4. All requirements for complying with the standards for management of wastes;

5. Requirements for removal, decontamination, closure, or post-closure of units, equipment, devices or structures that will be used to implement the remedy;

6. A schedule for initiating and completing all major technical features and milestones of the remedy; and

7. Requirements for submission of reports and other information.

B. Within ______________ [e.g., one hundred and twenty (120)] calendar days after this Permit has been modified, the Permittee shall demonstrate financial assurance for completing the approved remedy.

17. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

A. If at any time the Regional Administrator determines that modification of the Corrective Action Schedule of Compliance is necessary, he or she may initiate a modification to the Schedule of Compliance according to the procedures of this Section. If the Regional Administrator initiates a modification, he or she shall:

1. Notify the Permittee in writing of the proposed modification and the date by which comments on the proposed modification must be received; and

2. Publish a notice of the proposed modification in a locally distributed newspaper, mail a notice to all

persons on the facility mailing list maintained according to 40 CFR §124.10(c)(1)(viii), and place a notice in the facility's information repository (i.e., a central source of all pertinent documents concerning the remedial action, usually maintained at the facility or some other public place, such as a public library, that is accessible to the public) if one is required.

a. If the Regional Administrator receives no written comment on the proposed modification, the modification shall become effective _______________ [e.g., five (5)] calendar days after the close of the comment period.

b. If the Regional Administrator receives written comment on the proposed modification, the Regional Administrator shall make a final determination concerning the modification after the end of the comment period.

3. Notify the Permittee in writing of the final decision.

a. If no written comment was received, the Regional Administrator shall notify individuals on the facility mailing list in writing that the modification has become effective and shall place a copy of the modified Corrective Action Schedule of Compliance in the information repository, if a repository is required for the facility.

b. If written comment was received, the Regional Administrator shall provide notice of the final modification decision in a locally distributed newspaper and place a copy of the modified Corrective Action Schedule of Compliance in the information repository, if a repository is required for the facility.

B. Modifications that are initiated and finalized by the Regional Administrator according to this procedure shall not be subject to administrative appeal.

C. Modifications to the Corrective Action Schedule of Compliance do not constitute a reissuance of the Permit.

FACILITY SUBMISSION SUMMARY

Below is a summary of the planned reporting requirements pursuant to this Schedule to Compliance:

Facility Submission Requirements	Due Date
Notification of newly-identified SWMUs	fifteen (15) calendar days after discovery
Notification of newly-discovered releases	fifteen (15) calendar days after discovery
Progress reports on all activities	quarterly, monthly, etc., no later than ninety (90) calendar days after Permittee is required to begin implementation
SWMU Assessment Plan for newly-identified SWMUs	ninety (90) calendar days after receipt of request
Revised SWMU Assessment Plan	as determined
SWMU Assessment Report	sixty (60) calendar days after completion of implementation of SWMU Assessment Plan
RFI Workplan for SWMU(s) identified at time of permit issuance	forty-five (45) calendar days after the effective date of the permit
Revised RFI Workplan	as determined

Facility Submission Requirements	**Due Date**
RFI Report and Summary Report	sixty (60) calendar days after completion of RFI
Revised RFI Report and Summary Report	thirty (30) calendar days after notification of deficiency
Interim Measures Plan for interim measures identified at time of permit issuance	thirty (30) calendar days after the effective date of the permit
Interim Measures Plan for interim measures required after permit issuance	thirty (30) calendar days after notification
Revised Interim Measure Plan	as determined
CMS Plan	forty-five (45) calendar days after notification of requirement to perform CMS
Revised CMS Plan	as determined
CMS Report	sixty (60) calendar days after completion of CMS
Revised CMS Report	thirty (30) calendar days after notification of deficiency

Facility Submission Requirements	Due Date
Demonstration of financial assurance	one hundred twenty (120) days after permit modification for remedy

PERMIT ATTACHMENTS REFERENCED IN MODULE XII(B) - CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

This list is provided to assist the Permit Writer in checking that Permit Attachments referenced in this Corrective Action Schedule of Compliance are attached to the Permit. The purpose of the numbering used here is to facilitate crosswalking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, in preparing actual permits.

Permit Attachment Number	Plan or Document
XII(B)-1	Topographic map of facility showing SWMUs.
XII(B)-2	RCRA Facility Assessment (RFA) Report.
XII(B)-3	Table of action levels.
XII(B)-4	SWMU Assessment Plan.
XII(B)-5	SWMU Assessment Report.
XII(B)-6	RFI Workplan.
XII(B)-7	RFI Report and Summary Report.
XII(B)-8	Interim Measures Plan.
XII(B)-9	Corrective Measures Study (CMS) Plan.
XII(B)-10	Corrective Measures Study (CMS) Report.
XII(B)-11	Financial Assurance Demonstration.

MODULE XIII - POST-CLOSURE CARE

[Note: Include this permit module in all permits for landfills, surface impoundments, and land treatment units used for the disposal of hazardous waste. In addition, this module should be used for contingent post-closure care of surface impoundments, waste piles, and tank systems, used for storing or treating hazardous waste, that will be closed as landfills because clean-closure could not be accomplished.]

[Note: This module should also be used for Post-Closure Permits. Post-Closure Permits are required under 40 CFR 270.1(c) for "any unit which closes after January 26, 1983," i.e., for closing interim status facilities. Relevant conditions from the other modules also need to be included in the permit (see discussion in the Model Permit introduction).]

[Note: The Permit Writer should refer to the RCRA Permit Quality Protocol for additional guidance in developing or reviewing permit conditions. See discussion of the RCRA Permit Quality Protocol in the Introduction to this Model Permit.]

XIII.A. MODULE HIGHLIGHTS

[The Permit Writer should include a general discussion of the activities covered by this module. The discussion should contain the following information for each unit or group of units: types of wastes disposed in the unit; anticipated date of closure and the length of post-closure care for each unit; planned monitoring and maintenance activities; any special features associated with the post-closure care operation; and a reference to any special permit conditions.]

XIII.B. UNIT IDENTIFICATION

The Permittee shall provide post-closure care for the following hazardous waste management units, subject to the terms and conditions of this permit, and as described as follows:

Type of Waste Unit	Unit No. or Other Designation	Maximum Waste Inventory	Description of Wastes Contained	Hazardous Waste No.
[Example: **Landfill**	**Cells 1 through 9**	**1,000 yd^3**	**Dust from steel furnace**	**K061**
			Lead smelting dust	**K069]**

[Note: If the number of hazardous wastes in the unit(s) subject to post-closure care is large, the Permit Writer should use a separate attachment (Permit Attachment XIII-1) to list the wastes, in lieu of listing them all directly in Permit Condition XIII.B.]

XIII.C. POST-CLOSURE PROCEDURES AND USE OF PROPERTY

XIII.C.1. The Permittee shall conduct post-closure care for each hazardous waste management unit listed in Permit Condition XIII.B. above, to begin after completion of closure of the unit and continue for 30 years after that date, except that the 30-year post-closure care period may be shortened upon application and demonstration approved by EPA that the facility is secure, or may be extended by EPA if the Regional Administrator finds this is necessary to protect human health and the environment. [40 CFR 264.117(a)]

[Note: The Regional Administrator may shorten the post-closure care period if he finds that human health and the environment will be protected sufficiently. This could be determined through, for example, leachate or groundwater monitoring results, inherent characteristics of the hazardous wastes, application of treatment or other control technology that indicate that the hazardous waste management unit or facility is secure.] [40 CFR 264.117(a)(2)(i)]

[Note: The Regional Administrator may extend the post-closure care period if he finds that this is necessary to protect human health or the environment. A basis for this determination could be leachate or groundwater monitoring results that indicate a potential for migration of hazardous wastes at levels which may be harmful to human health and the environment.] [40 CFR 264.117(a)(2)(ii)]

[Note: The length of the post-closure care period may be set in the original permit, in which case it should be justified in the Administrative Record; or may be shortened or extended upon a permit modification.]

XIII.C.2. The Permittee shall maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of 40 CFR Part 264 Subpart F during the post-closure period. [40 CFR

264.117(a)(1)] **[The Permit Writer should refer to and use, as appropriate, Modules X, XI, and XII(A) in developing conditions to satisfy the Subpart F requirements.]**

[Note: The Permit Writer should include Permit Conditions XIII.C.3., XIII.C.4., and/or XIII.C.5., depending on the type of disposal units covered by the permit. Permit Condition XIII.C.5. should be used for surface impoundments, waste piles, and tank systems used for storing or treating hazardous waste that cannot be clean-closed and must be closed as landfills.]

XIII.C.3. The Permittee shall comply with the requirements for surface impoundments as follows: [40 CFR 264.228(b)(1) and (3)]

XIII.C.3.a. Maintain the integrity and effectiveness of the final cover, including making repairs to the cap, as necessary, to correct the effects of settling, subsidence, erosion, and other events; and

XIII.C.3.b. Prevent run-on and run-off from eroding or otherwise damaging the final cover.

XIII.C.4. The Permittee shall comply with the requirements for land treatment units as follows: [40 CFR 264.280(c)]

XIII.C.4.a. Continue all operations (including pH control) necessary to enhance degradation and transformation and sustain immobilization of hazardous constituents in the treatment zone to the extent that such measures are consistent with other post-closure care activities;

XIII.C.4.b. Maintain a vegetative cover over closed portions of the facility;

XIII.C.4.c. Maintain the run-on control system required under 40 CFR 264.273(c); and

XIII.C.4.d. Maintain the run-off management system required under 40 CFR 264.273(d).

[Note: The Permit Writer should also include Permit Conditions XIII.C.4.e., XIII.C.4.f., and/or XIII.C.4.g., if applicable.]

XIII.C.4.e. Control wind dispersal of hazardous waste as required under 40 CFR 264.273(f).

XIII.C.4.f. Continue to comply with any prohibitions or conditions concerning growth of food-chain crops required under 40 CFR 264.276.

XIII.C.4.g. Continue unsaturated zone monitoring required under 40 CFR 264.278.

[Note: The Permittee may terminate soil-pore liquid monitoring 90 days after the last application of waste to the treatment zone.] [40 CFR 264.280(c)(7)]

XIII.C.5. The Permittee shall comply with the requirements for landfills, as follows: [40 CFR 264.310(b)]

XIII.C.5.a. Maintain the integrity and effectiveness of the final cover, including making repairs to the cap, as necessary, to correct the effects of settling, subsidence, erosion, or other events;

XIII.C.5.b. Continue to operate the leachate collection and removal system until leachate is no longer detected;

XIII.C.5.c. Maintain and monitor the ground-water monitoring system and comply with all other applicable requirements of 40 CFR Subpart F;

XIII.C.5.d. Prevent run-on and run-off from eroding or otherwise damaging the final cover; and

XIII.C.5.e. Protect and maintain surveyed benchmarks used in complying with the surveying and recordkeeping requirements of 40 CFR 264.309.

[Note: The Permit Writer should include Permit Condition XIII.C.6. if he determines that the Permittee must continue to comply with any of the security requirements of 40 CFR 264.14 during part or all of the post-closure period. The condition should be included when hazardous waste may remain exposed after completion of partial or final closure; or access by the public or domestic livestock may pose a hazard to human health.]

XIII.C.6. The Permittee shall comply with all security requirements, as specified in Permit Attachment XIII-2. [40 CFR 264.117(b)]

XIII.C.7. The Permittee shall not allow any use of the units designated in Permit Condition XIII.B. which will disturb the integrity of the final cover, liners, any components of the containment system, or the function of the facility's monitoring systems during the post-closure care period. [40 CFR 264.117(c)]

[Note: The Regional Administrator may allow a variance to this condition if a disturbance is necessary to the proposed use of the property and will not increase the potential hazard to human health or the environment, or is necessary to reduce a threat to human health and or the environment.] [40 CFR 264.117(c)(1) and (2)]

XIII.C.8. The Permittee shall implement the Post-Closure Plan, Permit Attachment II-11. All post-closure care activities must be conducted in accordance with the provisions of the Post-Closure Plan. [40 CFR 264.117(d) and 264.118(b)]

XIII.D. INSPECTIONS

The Permittee shall inspect the components, structures, and equipment at the site in accordance with the Inspection Schedule, Permit Attachment II-3. [40 CFR 264.117(a)(1)(ii)]

XIII.E. NOTICES AND CERTIFICATION

XIII.E.1. No later than 60 days after certification of closure of each permitted hazardous waste disposal unit, the Permittee shall submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Regional Administrator a record of the type, location, and quantity of hazardous wastes disposed of within each cell or other disposal unit of the facility. For hazardous wastes disposed of before January 12, 1981, the Permittee shall identify the type, location, and quantity of the hazardous wastes to the best of his knowledge and in accordance with any records he has kept. [40 CFR 264.119(a)]

XIII.E.2. Within 60 days of certification of closure of the first and the last hazardous waste disposal unit, the Permittee shall:

XIII.E.2.a. Record, in accordance with _______ **(Permit Writer should insert state name)** law, a notation on the deed to the facility property -- or on some other instrument that is normally examined during the title search -- that will in perpetuity notify any potential purchaser of the property that:

(i) The land has been used to manage hazardous wastes;

(ii) Its use is restricted under 40 CFR Part 264 Subpart G regulations; and

(iii) The survey plat and record of the type, location, and quantity of hazardous wastes disposed of within each cell or other hazardous waste disposal unit of the facility have been filed with the Regional Administrator and _______ (Permit Writer should insert name of local zoning authority or the authority with jurisdiction over local land use).

XIII.E.2.b. Submit a certification to the Regional Administrator, signed by the Permittee, that he has recorded the notation specified in Permit Condition XIII.E.2.a., including a copy of the document in which the notation has been placed. [40 CFR 264.119(b)]

XIII.E.3. If the Permittee or any subsequent owner or operator of the land upon which the hazardous waste disposal unit is located, wishes to remove hazardous wastes and hazardous waste residues, the liner, if any; or contaminated soils, then he shall request a modification to this post closure permit in accordance with the applicable requirements in 40 CFR Parts 124 and 270. The Permittee or any subsequent owner or operator of the land shall demonstrate that the removal of hazardous wastes will satisfy the criteria of 40 CFR 264.117(c). [40 CFR 264.119(c)]

[Note: By removing hazardous waste, the Permittee may become a generator of hazardous waste and must manage it in accordance with all applicable RCRA requirements. If he is granted a permit modification or otherwise granted approval to conduct such removal activities, the Permittee may request that the Regional Administrator approve either:

a. **The removal of the notation on the deed to the facility property or other instrument normally examined during title search or**

b. **The addition of a notation to the deed or instrument indicating the removal of the hazardous waste.]**

XIII.E.4. No later than 60 days after completion of the established post-closure care period for each hazardous waste disposal unit, the Permittee shall submit to the Regional Administrator, by registered mail, a certification that the post-closure care for the hazardous waste disposal unit was performed in accordance with the specifications in the approved Post-Closure Plan. The certification must be signed by the Permittee and an independent, registered professional engineer. Documentation supporting the independent, registered professional engineer's certification must be furnished to the Regional Administrator upon request until the Regional Administrator releases the Permittee from the financial assurance requirements for post-closure care under 40 CFR 264.145(1). [40 CFR 264.120]

XIII.F. FINANCIAL ASSURANCE

XIII.F.1. The Permittee shall maintain financial assurance during the post-closure period and comply with all applicable requirements of 40 CFR Part 264 Subpart H. [40 CFR 264.145]

[Note: The Permit Writer should include conditions that cover the procedures the Permittee must follow to be released from financial assurance or to be reimbursed for post-closure care. The procedures will vary according to the type of financial assurance mechanism used. Permit Conditions XIII.F.2. and XIII.F.3. are sample conditions for cases where a post-closure trust fund is used.]

XIII.F.2. **The Permittee shall demonstrate to the Regional Administrator that the value of the financial assurance mechanism exceeds the remaining cost of post-closure care, in order for the Regional Administrator to approve a release of funds.** [40 CFR 264.145(a)(10)]

XIII.F.3. **The Permittee (or any other person authorized to conduct post-closure care) shall submit itemized** bills to the Regional Administrator when requesting reimbursement for post-closure care. [40 CFR 264.145(a)(11)]

XIII.G. POST-CLOSURE PERMIT MODIFICATIONS

The Permittee must request a permit modification to authorize a change in the approved Post-Closure Plan. This request must be in accordance with applicable requirements of 40 CFR Parts 124 and 270, and must include a copy of the proposed amended Post-Closure Plan for approval by the Regional Administrator. The Permittee shall request a permit modification whenever changes in operating plans or facility design affect the approved Post-Closure Plan, there is a change in the expected year of final closure, or other events occur during the active life of the facility that affect the approved Post-Closure Plan. The Permittee must submit a written request for a permit modification at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected the Post-Closure Plan. [40 CFR 264.118(d)]

[Note: The wording of this Permit Condition should be altered for post-closure permits (i.e., the references to expected year of final closure and events during the active life), and checked against the forthcoming rule amendments regarding permit modifications.]

PERMIT ATTACHMENTS REFERENCED IN MODULE XIII - POST-CLOSURE CARE

This list is provided to assist the Permit Writer in checking that all Permit Attachments referenced in this module are attached to the Permit. The purpose of the numbering scheme used here is to facilitate cross-walking with the model permit conditions. The Permit Writer may select other numbering schemes, as appropriate, when preparing actual permits.

Permit Attachment No.	Plan or Document (from the Part B Permit Application)
II-3	Facility Inspection Schedule
II-11	Post-Closure Plan
XIII-1	List of Wastes Contained in the Units Under Post-Closure Care
XIII-2	Security Procedures During the Post-Closure Period

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A. SUMMARY LIST OF PERMIT ATTACHMENTS FROM PERMIT MODULES I THROUGH XIII

MODULE NO.	ATTACHMENT NO.	PLAN OR DOCUMENT (most of these are from the Part B Permit Application)
Module I	None	
Module II	II-1	Waste Analysis Plan
	II-2	Security Plan
	II-3	Inspection Schedule
	II-4	Personnel Training Outline
	II-5	Procedures for Handling Ignitable, Reactive, or Incompatible Waste
	II-6	Flood Proofing/Flood Protection Plans and Specifications
	II-7	100-Year Flood Response Procedures
	II-8	Contingency Plan
	II-8A	Plans and Specifications Showing the Spacing of Aisles
	II-9	Closure Plan
	II-10	Contingent Closure Plan
	II-11	Post-Closure Plan
	II-12	Contingent Post-Closure Plan
	II-13	Closure Cost Estimate
	II-14	Post-Closure Cost Estimate
Module III	III-1	Secondary Containment Plans and Specifications

MODULE NO.	ATTACHMENT NO.	PLAN OR DOCUMENT
Module III (cont'd)	III-2	Ignitable or Reactive Waste Procedures
	III-3	Incompatible Waste Procedures
Module IV	IV-1	Plans and Reports to Support a Variance From the Requirements for Secondary Containment
	IV-2	Detailed Plans and Other Information Describing Secondary Containment Systems
	IV-3	Procedures for Conducting Leak Tests
	IV-4	Procedures for Preventing Spills and Overflows From the Tanks or Containment Systems
	IV-5	Procedures for Handling Ignitable or Reactive Waste
	IV-6	Procedures for Handling Incompatible Wastes
Module V	V-1	Design Plans and Reports for Installing Liners and Leachate Collection and Removal System and Operating the LCRS (or for an alternative design) (or for a monofill where the Agency has waived the double liner requirement)
	V-2	Design Plans and Operating Practices to Prevent Overtopping
	V-3	Design Plans and Operating Practices to Prevent Massive Failure of the Dikes
	V-4	Plans and Procedures for Leachate Management
	V-5	Schedules for Submitting Required Exemption Information

MODULE NO.	ATTACHMENT NO.	PLAN OR DOCUMENT
Module V (cont'd)	V-6	Procedures for Managing Ignitable or Reactive Wastes
	V-7	Procedures for Managing Incompatible Wastes
	V-8	Waste Management Plan for Special "F" Wastes
	V-9	Schedule for Submitting Progress Reports on Developing Alternatives for Handling Land-Banned Wastes
Module VI	VI-1	Design Plans and Specifications for Installing a Liner
	VI-2	Design Plans and Specifications, and Operating Practices for Installing and Operating a Leachate Collection System
	VI-3	Design Plans and Specifications, and Operating Practices for Installing and Operating a Run-On Control System
	VI-4	Design Plans and Specifications, and Operating Practices for Installing and Operating a Run-Off Management System
	VI-5	Design Plans and Specifications, and Operating Practices for Managing Run-On and Run-Off
	VI-6	Procedures for Controlling Wind Dispersal
	VI-7	Design Plans, Specifications and Operating Practices for a Waste Pile Inside or Under a Structure
	VI-8	Design Plans, Specifications and Operating Practices for Exemptions to 40 CFR 264.251(a).
	VI-9	Ignitable and Reactive Waste Management Plan

MODULE NO.	ATTACHMENT NO.	PLAN OR DOCUMENT
Module VI (cont'd)	VI-10	Incompatible Waste Management Plan
	VI-11	Special "F" Waste Management Plan
	VI-12	Schedule for Submitting Progress Reports on Developing Alternatives for Handling "Banned" Waste(s)
Module VII(A)	VII(A)-1	Land Treatment Program
	VII(A)-2	Design Plans and Specifications
	VII(A)-3	Treatment Zone Run-Off Control Plans and Specifications
	VII(A)-4	Run-On Control System Plans and Specifications
	VII(A)-5	Run-Off Management System Plans and Specifications
	VII(A)-6	Run-On And Run-Off Collection and Holding Facilities Design Plans and Operating Practices
	VII(A)-7	Wind Dispersal Control Program
	VII(A)-8	Unsaturated Zone Monitoring System
	VII(A)-9	Soil Monitoring and Soil-Pore Liquid Monitoring Procedures
	VII(A)-10	Sampling and Analysis Procedures
	VII(A)-11	Statistical Procedures
	VII(A)-12	Food-Chain Crops Plans and Procedures
	VII(A)-13	Ignitable or Reactive Waste Plans and Procedures
	VII(A)-14	Incompatible Waste Management Plan
	VII(A)-15	Special "F" Waste Management Plan

MODULE NO.	ATTACHMENT NO.	PLAN OR DOCUMENT
Module VII(A) (cont'd)	VII(A)-16	Schedule for Submitting Progress Reports on Developing Alternatives for Handling "Banned" Waste(s)
Module VII(B)	VII(B)-1	Plans and Specifications for the Land Treatment Demonstration
	VII(B)-2	Testing, Analytical Procedures and Data Sources
Module VIII	VIII-1	Design Plans and Operating Practices for Liners and Leachate Collection and Removal Systems
	VIII-1(a)	Alternative Design Plans and Operating Practices for Liners and Leachate Collection and Removal Systems
	VIII-1 (monofill alternative)	Design Plans and Operating Practices for a Monofill
	VIII-2	Design Plans and Operating Practices for the Leachate Collection, Removal, and Management System
	VIII-3	Design Plans and Operating Practices for the Run-On Control System
	VIII-4	Design Plans and Operating Practices for the Run-Off Management System
	VIII-5	Design Plans and Operating Practices for the Run-On and Run-Off Collection and Holding Facilities
	VIII-6	Wind Disposal Control System
	VIII-7	Ignitable and Reactive Waste Management Plan
	VIII-8	Incompatible Waste Management Plan
	VIII-9	Special "F" Waste Management Plan

MODULE NO.	ATTACHMENT NO.	PLAN OR DOCUMENT
Module VIII (cont'd)	VIII-10	Schedule for Submitting Progress Reports on Developing Alternatives for Handling Land-Banned Wastes
	VIII-11	Plans and Procedures for the Disposal of Small Containers (Lab Packs) of Hazardous Waste
Module IX(A)	IX(A)-1	List of Allowable Wastes
	IX(A)-2	Design Plans and Specifications, and Maintenance Procedures
	IX(A)-3	Description of Allowable Variations in System Design
	IX(A)-4	Description of Procedures for Controlling Fugitive Emissions
	IX(A)-5	Description of Monitoring Systems
	IX(A)-6	Description of Automatic Waste Feed Cut-Off Systems
	IX(A)-7	Description of Manual Waste Feed Cut-Off Systems
Module IX(B)	IX(B)-1	Description of Procedures for Controlling Fugitive Emissions
	IX(B)-2	Description of Monitoring Systems
	IX(B)-3	Description of Automatic Waste Feed Cut-Off Systems
	IX(B)-4	Description of Manual Waste Feed Cut-Off Systems
	IX(B)-5	Trial Burn Plan
Module X	G.W.1	Maximum Concentration of Constituents for Ground-Water Protection
	G.W.2	Cochrans Approximation to the Behrens-Fisher Student's T-Test

MODULE NO.	ATTACHMENT NO.	PLAN OR DOCUMENT
Module X	X-1	Facility Map Depicting the Monitoring Well Locations and Regulated Units
	X-2	Plans and Specifications for Monitoring Well Construction, Installation and Maintenance
	X-3	Methodology for Monitoring Well Abandonment
	X-4	Sampling and Analysis Plan
	X-5	Alternative Statistical Procedures
Module XI	G.W.1	Maximum Concentration of Constituents for Ground-Water Protection
	XI-1	Facility Map depicting Ground-Water Monitoring Wells and Regulated Units
	XI-2	Plans and Specifications for Monitoring Well Construction, Installation and Maintenance
	XI-3	Methodology for Monitoring Well Abandonment
	XI-4	Sampling and Analysis Plan
	XI-5	Statistical Procedures
Module XII(A)	G.W.1	Maximum Concentration of Constituents for Ground-Water Protection
	XII(A)-1	Facility Map Depicting the Monitoring Well Locations and Regulated Units
	XII(A)-2	Plans and Specifications for Monitoring Well Construction, Installation and Maintenance
	XII(A)-3	Methodology for Monitoring Well Abandonment

MODULE NO.	ATTACHMENT NO.	PLAN OR DOCUMENT
Module XII(A) (cont'd)	XII(A)-4	Corrective Action Program
	XII(A)-5	Sampling and Analysis Plan
	XII(A)-6	Statistical Procedures
Module XIII	XIII-1	List of Wastes Contained in the Units Under Post-Closure Care
	XIII-2	Security Procedures During the Post-Closure Period